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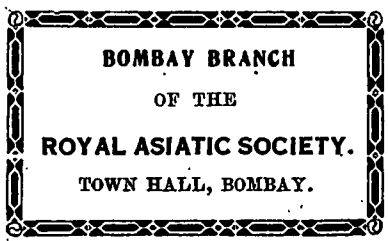

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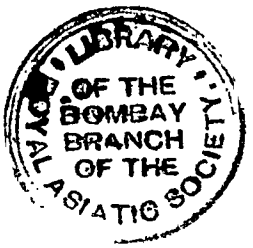

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Foreword

To the President of the Board of Trade.

Sir,

We were appointed in October, 1945, as a Working Party

" to examine and enquire into the various schemes and suggestions put forward for improvements of organisation, production and distribution methods and processes in the Cotton Industry, and to report as to the steps which should be adopted in the national interest to strengthen the industry and render it more stable and more capable of meeting competition in the home and foreign markets ".

We were informed, however, that matters concerning the relations between employers and employees which are dealt with by the Employers' Federation and Trade Unions and matters concerning the conditions of working in the factories which were under consideration by the Chief Inspector of Factories should not come within the scope of our enquiry.

We now submit our Report.

We have found it necessary for the most part to concentrate our enquiries upon Lancashire and the adjacent parts of Cheshire, Derbyshire and Yorkshire, in which by far the greater part of the industry is located. In October, 1939, over 95 per cent. of the operatives engaged in cotton spinning and 90 per cent. of those engaged in cotton weaving were employed in Lancashire and adjacent parts of Cheshire, Derbyshire and Yorkshire. Over 97 per cent. of the spinning spindles and 93 per cent. of the cotton looms were in what may be termed the Lancashire area. Finishing is rather more widely distributed, but probably at least two-thirds of those engaged in plants which process cotton were in Lancashire and the West Riding. Outside the Lancashire area the remainder of the cotton industry is principally located in the Midlands, in Scotland and in Northern Ireland, and although to some extent the production of these areas is specialised, there is considerable interchange of products between them and the Lancashire area, especially in finishing.

Although we have not been able to make any direct review of those parts of the industry which lie outside the Lancashire area, our recommendations are intended to apply to the industry generally, regardless of location. Some of them, in fact, would not be practicable if they had not this wider application.

Our first meeting was held on October 17th. We established four Sub-Committees to carry out factual enquiries into Costs and Costing Methods, Machinery and Plant, Scientific Research, and Distribution, and we co-opted outside persons to serve on the first three of them. The Chairmen of these Sub-Committees were Mr. R. W. Lacey (the Cotton Controller), Mr. C. B. Clegg, Professor E. L. Hirst and Sir George Schuster respectively. We held in all 97 meetings, including meetings of our Sub-Committees, and received evidence orally and in writing from a large number of organisations and individuals, representing not only the various sections of the cotton industry

itself but also interests closely connected with the industry such as textile wholesalers and retailers, garment makers and textile machinery makers. We wish to extend our grateful thanks to all those who have assisted us.

Our special thanks are due to Sir Raymond Streat, the Chairman of the Cotton Board, and the members of his staff for their unfailing co-operation in making available to us whatever we wanted from the great store of information the Cotton Board have acquired and in assisting us by all the means in their power.

We must express our great appreciation of the work done by the co-opted members of our Sub-Committees. They were :—

Costs Sub-Committee :

Mr. R. W. Lacey (Cotton Controller)
Mr. V. P. Bagnall (Fine Cotton Spinners' & Doublers' Association, Limited)
Mr. J. W. Burdett (Ministry of Supply)
Mr. F. Leadbetter (Messrs. Horrockses, Crewdson & Co., Limited)
Mr. A. Sidebottom (Cotton Control)
Mr. H. P. Wild (Lancashire Cotton Corporation, Limited)

Machinery and Plant Sub-Committee :

Mr. J. Buckley (Lancashire Cotton Corporation, Limited) (since deceased)
Mr. E. W. Cockcroft (Messrs. John Cockcroft & Sons, Limited)
Mr. J. W. Davies (Messrs. Ferranti, Limited)
Mr. H. A. J. Duncan (Messrs. Horrockses, Crewdson & Co., Limited)
Mr. J. D. Greenwood (Messrs. Barlow Bros. & Greenwood, Limited)
Mr. N. G. McCulloch (The Calico Printers' Association, Limited)
Mr. G. B. Fielding, Secretary (The Cotton Spinners' and Manufacturers' Association)

Research Sub-Committee :

Mr. J. Baddiley (Imperial Chemical Industries, Limited)
Professor Willis Jackson (Manchester University)
Mr. W. Kershaw (The Bleachers' Association, Limited, and the Textile Institute)
Mr. J. T. Marsh (Messrs. Tootal, Broadhurst, Lee Co., Limited)
Professor W. E. Morton (Manchester University)

They were all busy men and we are greatly indebted to them for the time and trouble which they gave to our work. We are indebted not only to them personally, but also to the organisations and firms with which they are connected.

We record our deep regret at hearing of the recent death of Mr. J. Buckley, whose services as a member of the Machinery and Plant Sub-Committee were of the highest value.

Finally, we desire to record our thanks to Mr. MacMahon, the Secretary of the Working Party, and Mr. Wilks, Assistant Secretary, whose untiring work has been invaluable to us.

Introduction

The purpose of this Report is to concentrate attention on the future—a future which is likely in most of the vital factors to be entirely different from the past. The real centre of interest lies ahead and the real need is for a new outlook.

To state this need does not necessarily imply criticism of the past. The troubles of cotton in the inter-war years were primarily due to the impact of external shocks with which no industry, however efficient, could by its own efforts have coped. But, however fully that is accepted, the industry now stands to be judged, not on its past record, but on the way in which it can deal with the new tasks and problems of the future.

It is impossible to over-emphasise the importance of conceiving the present occasion as an opportunity for making a fresh start, carrying forward indeed all that is good in old skills and experiences, but sloughing off a mass of wearisome old controversies, prejudices, suspicions and restrictive practices. The time has come for entirely different thoughts. Now there is a chance to end the long rearguard action. It is a waste of effort to argue whether it could have been avoided or better fought. Just as El Alamein marked the turn of the war, so the present occasion can be made a turning point in the history of cotton. The analogy points both to the need and to the opportunity—to consolidate the position, to appreciate the task, to get full value from modern equipment and scientific knowledge, and, above all, to work in a spirit which combines confidence, an understanding by all ranks of the job to be done, and a readiness to work together for the success of the industry as a whole.

We are fully conscious that words like this have been used many times before. Exhortations to the industry have become monotonous. But there are special features in the present situation which justify hopes of a special response. Much has been learned during the war. People have been brought together in a new way. There are signs of a new spirit at work in many places. Now, too, it is possible to look ahead to two or three years of steady demand for all that the industry can produce, and these conditions will afford a unique opportunity to try out new methods and to get the industry organised to meet the difficulties that lie beyond. Finally there is the memory of past experience. There can be no one who, looking back to what happened in the years after the last war, does not feel that if matters during those years had been handled differently, then, even though much that followed was inevitable, great suffering and loss could have been avoided. There can surely be none who are not ready now to say "*This* time the opportunity must be rightly used".

We do not ignore the difficulties. The path forward is not easy. The industry is hampered by its past in many ways. It cannot suddenly change its form or its equipment. Progress at many points may be painfully slow. All this is recognised in our Report. But, none the less, it is written in a spirit of real hope—hope in the sense that there is a future worth working for, if only all concerned will work together in the right way.

In our review we have asked ourselves three questions :—

A. Where do we stand now ?
(What are the facts of the situation, the present state of the industry and its organisation ? What are its present and potential resources ? What opportunities lie ahead ?)

B, Where do we want to get ?
(What are the objectives at which the industry should aim ?)

C. How can we get from A to B ?

These questions must be answered clearly and objectively if there is to be any sound foundation for a practical programme. Adequate answers have not been readily available. We have found it necessary, for example, to give much time to Question A, and even so, we must frankly admit that on some important issues we have not been able to get sure or complete factual evidence. Yet many of the controversies which divide opinion in Lancashire arise because differing assumptions are made as to the " facts " of the situation.

It is, however, on the answer to Question C that the real work is needed and it is on this that the practical value of any report must depend. It is easy to state general objectives, such as better integration of the industry, increased efficiency, better marketing methods, more use of research, etc. The difficulty lies in *how* to bring about these desired results, and to do that neither in reliance on rigid central control (which, even if it would work in so complex an industry, is a method inconsistent with our terms of reference), nor on importing a new race of supermen (who will not be available), but by the agency of the human beings who, with their marked traditions and characteristics, will have to provide the hands and brains to do the actual work.

Account, too, must be taken of things as they are. If the whole industry could be rebuilt afresh, there might be a wide measure of agreement as to the shape which it should take, and a fresh start could be made. But it is not a case of writing a new pattern on a clean sheet.

Lord Wavell, in one of his well-known lectures on Generals, pointed out that the most important mental quality for Generalship is what the French call " le sens du practicable " ; and that it is ignorance of the " mechanism of war—the ' logistics ' of war some people call it—which puts what we call amateur strategists wrong, not the principles of strategy themselves which can be apprehended in a very short time by any reasonable intelligence ".

We do not suggest that the work of the cotton industry can be directed like a military campaign. But, none the less, these thoughts apply to making recommendations for its future. It is in the " logistics " that the real difficulties lie.

In the following chapters an attempt is made to face these difficulties realistically and to show the way, not to a final consummation, but for the next steps on the right road. We had hoped to write a short report ; but the course of our enquiry impressed on us the need for checking many of the assumptions which are so readily accepted in current discussion and for setting out the facts over a wide range of subjects. We have also thought that it would be convenient to give a sufficiently comprehensive account of the position for the use of those who are not already familiar with it. We have tried to cut out all unnecessary detail ; but the complexity of the field to be covered has made extreme brevity impossible. The problem is in fact directly connected

with not one, but several separate industries of which the main ones are spinning, doubling, weaving and finishing, together with a complex and, for the most part, quite separate organisation for merchanting and distributing their products. Beyond that, account must be taken of another important industrial field, the production and treatment of new fibres. And lastly the relations between the textile industry and the textile machinery industry are of such crucial importance that the latter must also come under review.

PART I. FACTUAL SURVEY

Chapter I

THE HISTORICAL BACKGROUND AND THE FUTURE

1. A short review of the historical background is necessary for our task. Such a review helps not only to explain present attitudes, but also to reveal trends which may still continue or sequences which may be repeated in the future.

Early History

2. Lancashire is a very ancient home of textile industries. It started on wool nearly 800 years ago; linen followed a little later. Its products were widely known in Henry VII's reign, and in Elizabethan times had already important export markets. Cotton was first introduced and treated in mixture with flax about 1600 and for a time four textile industries (wool, linen, silk, cotton) were carried on. Cotton came to predominate after the introduction of new machinery and steam power; but the boundary between cotton and other fibres has never been entirely fixed or closed. This is relevant to discussions to-day, since, if Lancashire should now turn increasingly to rayon and other new fibres, that would be in harmony with early history and a sign that the Industry and its people have not lost their traditional adaptability.

More Recent Developments

3. Turning to the developments of the present century, these can best be understood if they are seen as a continuous evolution, interrupted and disturbed by the two world wars. In these war periods, developments which might have taken a generation were telescoped into a few years, while the pressures of war caused distortions in the world's economic structure which permanently affected the trading and financial relations between one country and another.

4. Viewed in this way the story of cotton can be briefly summarised.

(*a*) *The First Phase—up to 1914—a Phase of Expansion.*—Lancashire supplied two-thirds of the world's cotton textile imports. The expansion depended mainly, not on the winning of markets in competition with other modern industries, but on using our industrial lead to sell factory products to non-industrialised countries in which British political influence was used to maintain the British creed of Free Trade. In that phase the industry developed many of the methods of mass production and specialisation of function which it is now being called upon to adopt as something new. Signs of impending changes could have been read in the last years of this period.*

(*b*) *The 1914–18 War Disturbance.*—The war, by forcing many countries to feel the pinch of dependence on British textiles, stimulated a movement which had started before 1914. Some of Lancashire's main customers (above

* It is important to realise that the effects of the development of textile industries in other countries were already to be seen in the years before 1914. Their total effect on British exports was obscured by increases in exports to India.

all India) were strengthened in their determination to have their own national industries. Japan got the opportunity to gain strength and made plans for a great export trade. The peace after 1918 meant in reality an awakening to an entirely changed world. The writing on the wall was not read (textile machinery exports alone should have made it plain) and things were done in blindness to realities. The immediate post-war scramble for goods gave the chance for high prices and profits. The profits were used, not for strengthening the industry to meet the new competitive conditions, but mainly to pay high dividends and support share gambles. (An examination of 150 companies shows that the average paid by dividend-paying spinning firms in 1920 was 40·2 per cent.)

(*c*) *The Second Phase: Contraction, Surplus Capacity and Unemployment.*—The special significance to Lancashire of the recession which began in 1920 was not appreciated at the time, mainly because it was overshadowed by a general fall in commodity prices and a consequent reduction of world purchasing power, whose effects lasted until 1924. By the end of 1924 the post-war oscillations were over and we entered a phase of contraction which was greatly intensified after 1930, and continued till the second World War. In this phase Lancashire had to face its own special difficulties caused by the development of textile industries in other countries, made still greater by the worst world economic crisis ever known. The main facts are familiar. Everyone knows how exports to India dropped from over 3,000 million yards in 1913 to under 300 million in 1938. Everyone knows that we were driven out of other markets by a fierce competitive onslaught from Japan—based on a combination of "rice-standard" wages, modern machinery and a national policy determined to have exports at all costs. But it is not so generally appreciated that other countries, too, adopted policies which had damaging effects on Lancashire on a smaller but still very substantial scale. For example, as a result of a tremendous tariff increase, British exports of piece-goods to the U.S.A. fell from 163 million square yards in 1924 to 11 million in 1931. Brazil was another country whose tariff policy killed our trade, exports dropping from an average of 63·5 million square yards in the years 1925–27 to less than 3 million in 1932. Lancashire was in fact hit by blows from all sides. Roughly speaking, two-thirds of her export losses were due to development by her former customers of their own industries, and one-third was captured by Japan. Right up to 1939 the industry was fighting a retreating rearguard action. It had been unable to consolidate itself on a new position. When the second World War came it was still unbalanced, unstable and unprofitable. The 1939 Act, passed a few weeks before the war, was the final effort to create a basis of stability, but, owing to the outbreak of war, it was not put into operation.

(*d*) *The 1939–45 War Disturbance.*—The six years of the second World War must be expected once more to have made structural changes in the world economy, perhaps even greater than those of the first, and, on top of this, the Lancashire textile industry has been cut down this time by war concentration, in a way which did not happen in 1914–18.

(*e*) *The Third Phase: The Unknown Future.*—In this condition we enter the Third Phase and face the unknown future. Once again we wake up to a world in which the permanent effects of the structural changes brought about by the war are not yet apparent. Once again there is a shortage of goods and a demand at high prices for much more than we can produce. Can the industry this time see the truth behind these transitional symptoms and take effective steps to prepare itself for the changed conditions which in due course must be faced? What will the changes mean? What steps can the industry take?

5. These are the questions that have been in our minds throughout our investigation. In later chapters we shall deal more fully with their

implications. Before that, however, it is necessary to complete the review of the past by cosnidering the main practical results of the events which we have briefly summarised.

The Inter-War Years

6. The main features of these are brought out in the following table (which, for simplicity, deals only with the spinning, doubling and weaving sections.)

TABLE 1

CHANGES IN THE COTTON INDUSTRY, 1912-38

YEAR	PRODUCTION		EXPORTS	MACHINERY		LABOUR
	Yarn[1]	Cloth[2]	Piece-Goods[3]	Spindles[4]	Looms	Spinning, Doubling and Weaving
	mln. lb.	mln. sq. yd.	mln. sq. yd.	million	000	000
1912	1,963	8,050[5]	6,913[5]	61·4	786	621·5[6]
1924	1,395	6,046	4,444	63·3	792	572·4[7]
1930	1,048	3,500	2,472	63·2	700	564·1[8]
1937	1,375	4,288	2,000	44·1	505	408·6[8]
1938	1,070	3,126	1,449	42·1	495	393·0[8]

1. Including cotton waste and spun rayon yarns.
2. Including rayon piece goods and mixtures woven in the cotton industry.
3. Including rayon piece goods and mixtures of cotton and rayon.
4. Mule equivalents—i.e., a ring spindle taken as equivalent to 1½ mule spindles. Figures for 1912–1930 are only approximate, and are not strictly comparable with those for later years.
5. Linear yards.
6. Number actually employed.
7. Number of insured workers aged 16 and over.
8. Number of insured workers aged 16–64.

7. This table brings out vividly the contraction suffered in the inter-war years. Contraction on this scale would, in any industry, have set up such a problem of redundant capacity as could have been solved only by heroic re-adjustments involving major reactions throughout the whole national economy. There have been other cases throughout the world where industries have been affected by a sudden drop in the demand for their products; but, for a major industry, the scale and rapidity of the decline shown above can hardly have a parallel.

8. And the problem set up in this case was, owing to the character of the industry, specially intractable. As has been well observed in a recent survey* of cases of this kind :—

> " the persistence of problems of excessive capacity is found only in those industries in which either one or both of the following conditions exist. The first condition is that a large proportion of the labour employed is exceptionally immobile, either because it possesses highly specific skills or because opportunities for alternative employment in its own neighbourhood are lacking. The second condition is that the capital resources of the industry are embodied in highly specific equipment."

Both these conditions applied to the Lancashire cotton industry, and the potency of the first was greatly strengthened by the tenacious and conservative character of the Lancashire people.

* An article by Professor G. C. Allen in the *Economic Journal* for June-September, 1945

EFFECTS ON THE LABOUR POSITION

9. We are concerned with this past episode for the lessons which it teaches and the marks which it has left, and those on the human side are the most important. Indeed the Lancashire problem can never be properly understood if human factors are forgotten. Behind the bare statistical records lies a wide range of human hardship and tragedies. The memories of these still profoundly affect the position. And it must be remembered too, that, throughout all the shocks which have struck the Lancashire industry, the main shock-absorber has been the great army of operatives. Table 2 below shows that the number of insured workers who looked to cotton spinning and weaving for employment in 1924 was 572,400 but that only 287,800 on an average were employed in 1938. Nearly 285,000 persons in these sections of the industry either went out of cotton, retired without replacement, or remained unemployed. And it must always be remembered that these figures do not show the effects of short-time working and wage reductions.

10. What marks has this experience left? That can be seen from the following table :—

TABLE 2

LABOUR FORCE : SPINNING, DOUBLING AND WEAVING

Year	Total insured	Average unemployed	Average employed (insured)	Approximate annual entry	Average age of all those employed
	000	000	000		
1912 ...	—	—	621·5*	—	29 (1911)
1924 ...	572·4	73·5	498·9	27,000	—
1930 ...	564·1	208·2	355·9	20,000	34 (1931)
1938 ...	393·0	105·2	287·8	12,000	—
1945 ...	209·1	0·2	208·9	Under 5,000	37 (1944)

* Number actually employed.

11. These are striking figures. Hardly more than one-third of the 1924 labour force remains. The inflow of new entrants has been reduced to a trickle. The average age of those employed has greatly increased. War conditions have helped to consummate a revolutionary change. Concentration, and the entry into the cotton area of many new industries, coming on top of the black memories of the past, have created a totally new problem—shortage of labour, and especially of young recruits, for the textile industry. There are many other new problems, but this will be the dominating one in the scene with which we are concerned.

12. And that points to another great change that has to be faced in regard to labour. Workers, and especially young new entrants, on the inflow of whom the future health of the industry depends, will not be attracted unless wage rates are satisfactory and conditions of work are greatly improved and unless faith is restored that the industry is one which offers both security of employment and prospects of advance. These points have been well stated in the report of the Evershed Commission on wages in the spinning section. But a mere recommendation of higher wages is not enough. The industry must be so organised and operated as to earn them. What this means will be dealt with more fully in later chapters. The object of the present

chapter is merely to state the main facts which create the need for a new outlook and to emphasise at the outset that the problem of labour supply will be of dominating importance.

EFFECTS ON THE INDUSTRY

13. Next we must turn to the marks left by the painful phase of contraction and surplus capacity on the organisation and attitude of the industry. Once the full impact was felt of the external forces already described, the industry was caught in a vicious circle of difficulties. The new external competition created an urgent need for taking every possible step to improve productive efficiency, but at the same time its own immediate effects in reducing sales led to financial loss, redundancy and a demoralising form of internal competition which threw the industry's marketing practices into confusion and weakened its power to take the steps which were required. Indeed positive counteracting forces were set up, since, so far as concerned one of the possible methods for increasing productive efficiency, viz.: the installation of labour-saving machinery, that appeared to mean reducing jobs at a time of appalling unemployment.

14. It is certainly true to say that the industry as a whole allowed much of its equipment to get out of date. But, before making this a matter for criticism, it is necessary to appreciate the difficulties in which all concerned were working and also the fact that, *whatever* they had done to reduce costs and prices, the countries which wanted to develop their own industries would have countered such reductions by strengthening their own measures to keep out unwanted imports. They would either have raised their import duties or, as in the case of India, have boycotted British goods. As already noted, two-thirds of the losses in export sales would in this way have been inevitable. As to the remaining third, lost to Japan, the inevitability may not be so unquestionable; but it is difficult to see how Lancashire could have competed effectively with the methods actually adopted by Japan unless there had either been a national policy for subsidising British exports or a serious sacrifice of British standards of living.

15. Whilst we believe that the foregoing appreciation is correct, and that the main losses in export trade were due to causes which no increase in productive efficiency could alone have countered, it does not by any means necessarily follow that anxieties about Lancashire's productive efficiency are unjustified. It is sometimes argued that, because so much trade was preserved and because even countries like the U.S.A. had to impose very high protective duties in order to keep British textiles out, therefore the standard of efficiency in Lancashire must have been very high. We believe that this argument may lead to a mistaken and dangerously complacent view. It is necessary to bear in mind certain special features of the way in which the Lancashire industry was operating and reckoning its costs. In the first place it was relying on having at its disposal a cheap, highly skilled labour force* which it could turn off or put on to short time at any moment. Secondly, it was living on its capital in the sense that it was not earning or including in its operating costs a sufficient return to maintain its capital equipment. A large number of firms were working with plant which was written down very low and for

* It is necessary to emphasise the importance of the skill of the operatives which was such as to get high quality results out of old machinery. The Platt Mission, describing British methods in weaving, says: "For the success of this system it is essential that there should be a large and cheap, but nevertheless highly skilled, labour force available. It is a system based on the allocation of a relatively large part of the work of weaving to the operative and a relatively small part to the machine." (Report of the Cotton Textile Mission to the U.S.A., March–April, 1944, p. 28.)

the replacement of which they were not making adequate provision. These are generalisations to which there have doubtless been many individual exceptions; but we believe that they are broadly true of the industry as a whole. Conditions such as these as regards labour and earnings cannot provide a sound permanent competitive basis for an industry.

16. We turn now to consider the marks left on the industry by the course of affairs which we have described.

(*a*) *Short Time, Unemployment and Wage Reductions.*—Although the first effects of the 1920 slump were felt by merchants in the form of cancelled orders and cessation of buying, they were quickly transmitted to the spinning and weaving sections, where they were met in the first instance by organised short time (in the spinning section) and by wage reductions. Large numbers of operatives could find no work while others were employed in alternate weeks in order to enable them to draw unemployment benefit in the intervals of working.

(*b*) *Price-cutting and Competitive Debasement.*—The struggle for orders in declining markets intensified many undesirable influences. In the spinning section particularly, prices were cut to a level which not only left no margin for interest and depreciation but which in many cases did not fully cover direct running costs. In all sections attempts to undersell competitors tended more and more to take the form of supplying a yarn, a cloth or a finish a little cheaper or lower in quality than the competing article. This process of competitive debasement, which in itself was nothing new,* was in these difficult years brought to a pitch which had a serious effect on methods of production and marketing by leading to the creation of innumerable small variations in yarn counts and cloth or finishing specifications.

(*c*) *Inability to Modernise Plant.*—The conditions described above meant that, with the exception of a few firms of outstanding ability which maintained their position in various special lines, the industry as a whole was working with a margin of profit which left it with no adequate balance to devote to re-equipment,† and was too low to attract new capital. Accordingly it stood still in its methods just at a time when new industries were growing up elsewhere, with the result that it has become in some respects out of date in comparison with the industries of other countries. The full significance of this has, for the reasons stated in paragraph 15, hitherto been obscured.

(*d*) *General Attitude towards Re-equipment.*—Past conditions have not only limited the industry's power to replace old plant, but they have also affected the general attitude to re-equipment. There exists among many a feeling that, however successful the Government may be in a policy for full employment in this country, there will be booms and slumps in international trade leading to recurring periods of excess capacity. Past experience indicates that, in the resulting pressure on prices, the firms with the heaviest fixed capital charges (i.e., those which have re-equipped) will suffer most, while

* Those who regard this as a striking new phase of degeneracy may perhaps be interested to read the following quotation from Emerson's "English Traits", written apparently after his visit to Manchester in 1847. Referring to the "reaction of machinery—the larger machinery of commerce," he says: "'Tis not, I suppose, want of probity, *so much as the tyranny of trade which necessitates a perpetual competition of under-selling, and that again a perpetual deterioration of the fabric.*"

† As we point out later, the method of taxing industrial profits made re-equipment more difficult. During the last six years, too, war-time restrictions would in any case have made any important re-equipment impossible.

those that can go on working old plant will be able to scrape through with price-cutting. This explains the widely expressed conviction that a scheme of price maintenance is an indispensable preliminary to re-equipment.

(*e*) *Attempts to deal with Redundancy.*—Up to 1931 the elimination of surplus plant was left almost entirely to the normal process of economic attrition. The finishing combines, it is true, closed a number of redundant works and concentrated their production in the remainder, but in the spinning and weaving sections, and among the smaller finishing concerns, the problem of deciding whether and when to give up the hopeless struggle had to be determined individually either by the firm, or, in many cases, by its creditors. In 1931 the Joint Committee of Cotton Trade Organisations brought forward proposals for concentrating production and eliminating surplus capacity, but it was not until 1936 that any section of the trade was prepared to adopt this remedy. By that time at least two new spinning amalgamations had come into existence with the object, among others, of closing down a proportion of idle or uneconomic mills.* The Spindles Board set up under an Act of 1936 spread the cost of dealing with redundant machinery over the whole section by means of a levy; by 1939 it had acquired and scrapped 6 million spindles. In the weaving section, as Table 1 indicates, the number of looms was substantially reduced between 1924 and 1937, though the reduction did not keep pace with the fall in demand. It is more difficult to trace exactly what happened in the finishing section but, as mentioned above, the main work of closing down redundant plant was accomplished by the three large combines.

(*f*) *Other Special Measures.*—Many attempts to reorganise the industry were made. Apart from direct Government assistance by subsidies and tariffs, all the methods used by other British industries in similar circumstances were tried in Lancashire. Price-fixing associations, regulation of output by quotas, amalgamations, redundancy schemes and special marketing methods were all considered, and occasionally put into practice. Compared with similar measures in some other industries they met with more opposition within the trade and even when effectively applied were less successful in restoring a degree of profitability. The main reason was not greater stupidity in the cotton industry but the different size and nature of its problem—the enormous and largely irrecoverable fall in export demand which we have described above. Under such circumstances the usual ways of meeting excessive competition and falling demand—price-fixing and the division of the market between individual firms by means of quotas—could not be used with much success. In addition, the special features of the industry's structure—a very large number of firms, most of them small, and almost all engaged in only one stage of the process of converting raw cotton into goods in the shops—made it most difficult for the trade as a whole, first, to appreciate the size of the problem which faced it, and then to agree on and implement a common policy. Moreover, the geographical concentration of the industry increased the social costs of contraction and embittered the atmosphere in which schemes had to be worked out.

Perhaps the most striking and characteristic fact about Lancashire's efforts to escape from depression was that for the greater part of the inter-war period they were conducted primarily on a sectional basis, and that even within the sections policies which commanded the support of a majority were often frustrated by dissident minorities.

The formation of the Joint Committee of Cotton Trade Organisations in 1925, and of the Cotton Trade Statistical Bureau in 1927, as its instrument for

* The Lancashire Cotton Corporation, for example, acquired a total of nine million spindles which it had reduced by 1939 to four and a quarter million.

conducting inquiries, were useful moves which have proved to be of permanent value, although they could not produce action to stem the general tide of depression. They did, however, result in a number of valuable reports, recommending measures for improving and strengthening the position of the industry. Some of these reports advocated amalgamations (e.g., a report by the Spinners' Sub-Committee of the Joint Committee in 1928); others dealt with the lack of co-ordination between the producing and distributing sections. Various proposals for co-operative marketing were made and one or two were actually tried (e.g., an experiment* in the bulk production and marketing of a standard cloth for China through the Eastern Textiles Association Ltd.). Unfortunately, none of these efforts was sufficiently maintained to yield permanent results, partly because they were launched just before the world slump of the early '30's. More success attended the efforts sponsored by the Bank of England through the Bankers' Industrial Development Company, which led to the formation of the Lancashire Cotton Corporation and other " cleaning-up " operations. These certainly helped to create a more orderly position.

But, in spite of all these attempts, the industry was unable to devise a uniform policy or to consolidate itself on a stable and profitable basis and avoid the " competitive debasement " referred to under (*b*) above.

The final stage was the joint movement which led to the passing of the Cotton Industry (Reorganisation) Act of 1939. It is not necessary for the purposes of this chapter to review in detail the complex provisions of that Act. It was based on the view that the industry could not get itself into a sound position unless producers were protected against " uneconomic " internal competition and weak selling originating from the existence of surplus productive capacity. It accordingly created machinery for fixing compulsory minimum prices. The powers of control were to be exercised through a statutory Cotton Industry Board. We shall deal in a later passage more fully with this basic proposal. For the present we merely comment on the fact that in all the discussions about the Bill the danger was recognised that reliance on a rigid minimum price scheme might weaken the necessary urge to increase efficiency and, therefore, in the long run not help to strengthen the industry's competitive position. As a result of this recognition it was found necessary to introduce so many loopholes and safeguards that it must remain doubtful whether the Act would have been found workable or able to achieve its object. It was finally passed only a few days before the outbreak of war, and was not put into effect because price controls had to be exercised directly by the Government as part of the war measures.

One highly important point must be mentioned in connection with the 1939 Act. In the movement which led to it the industry recognised that in the condition to which it was then reduced it could not secure its own regeneration by the normal methods of free competitive enterprise.† It was forced to ask Parliament to create statutory powers for ensuring orderly competition.

(*g*) *The Cotton Board.*—It remains to mention one other most important feature. Although the coming of the war led to putting the 1939 Act on the shelf, a Cotton Board with modified functions was set up by an Act of 1940. The Board has become an indispensable organisation during the war years. In its activities it has maintained direct contact with Government departments and has ensured as between the various sections of the industry a greater

* Para. 66, Clynes Committee's Report (Cmd. 3615, 1930).

† A ballot taken by the Board of Trade showed that the percentage of the producing sections as a whole which voted in favour of the scheme was 65 per cent. by firms, 72 per cent. by employment and 70 per cent. by output.

measure of collaboration and harmony than has ever existed before. It has fully proved the value of a central focal point for the study of the joint problems of the industry. In addition, it has supplied a means whereby important services can be provided on behalf of the industry as a whole. Noteworthy examples of these services are the Recruitment and Training Department, the Colour, Design and Style Centre, and the administration of the Care and Maintenance Schemes for the assistance of concentrated firms.

External Changes

17. In the meanwhile changes have been taking place in the surrounding world which further reinforce the plea for a new outlook. The conditions created by the second World War have provided a stimulus, even more powerful than that of 1914–18, to the development of secondary industries (and especially the textile industry) in countries which in the past have relied largely on Lancashire products. For the second time in twenty-five years many countries have had to go short of essential clothing because they had relied on imports. That has been a lesson which will not be forgotten. But that of course is not all. Great changes of other kinds will result from the war which will affect Lancashire's position, some in one way, some in another. Many questions have to be asked—What will be the permanent results of Japan's crushing defeat? What may happen if China finds political stability and is able to get part of her vast population to steady work in secondary industries? What will be the effect on Germany and on other countries in Europe? (For example, what will happen to Lancashire's former market for fine yarn to the German glove industry or for other Continental users?) Will India maintain and perhaps increase the large export position in cheap textiles which she created during the war? Will the U.S.A. become a powerful competitor in export markets—seeking outlets for the productive capacity of 3,000 million yards surplus to her own pre-war requirements to which she worked up during the war? What will be the effect of the change in our own position from that of a creditor to a debtor nation—a debtor chiefly to the U.S.A.? How, for example, will that affect the choice of the types of raw cotton which we import or the advantages of relying more on new fibres as the basis for textile products?

No sure answers can yet be given to any of these questions. But two things are certain, first that the cotton industry must be ready to adapt itself to great structural changes, and, secondly, that the need for skill in finding market outlets and in planning Lancashire's production to meet them will be greater and not less than it was before the war. No attitude could be more unjustifiable or fatal than that of complacently expecting that, now that Japan is beaten, the industry, relying on its old methods, can find an easy return to pre-1914 prosperity.

New Fibres

18. Another strongly working influence for change is scientific advance. The change most immediately affecting Lancashire is, of course, the development of artificial fibres already referred to. This must powerfully affect the future for any textile industry. An important British industry for the production of new fibres had been built up by 1939. During the war exports of rayon yarn and fabrics actually increased, but the technical development of the industry was hindered by the diversion of effort for war purposes to an extent beyond that experienced by rayon producers in some other countries. None the less, technical progress has been made and the industry itself is anxious to make up for the time lost. It must be realised, however, that, before the war, the U.K. had not established a pre-eminent position among the rayon producers of the world, although British producers had important overseas

interests. Comparison of the trend of U.K. production with the trend in the rest of the world should take account of the fact that the production of new fibres, especially staple fibre, was stimulated in Germany, Italy and Japan for the sake of economic self-efficiency and regardless of consumer interests; but there can be no gainsaying that in the export field Japan dominated the world. In 1937 Japan accounted for some 500 million square yards out of total world exports of 700 million square yards of rayon piece goods, as compared with only 30–40 millions from the U.K.

19. It must be noted that the development of new fibres is only one illustration of the rapid advance in science and technology and the application of scientific knowledge and method to industrial practice which has taken place since the first world war and which has just received an immense new stimulus in the last war. All progressive industries must recognise that we stand at the threshold of a new era.

Changes in the National Position

20. We cannot conclude this broad survey of the background without saying something of the national conditions in which the problem for the cotton industry is set. In these national conditions, too, it is necessary to face great changes. In the inter-war years the pressing evil was unemployment; the essential problem was how to find jobs for workers. The problem of the future years will be exactly the reverse—how to find enough willing workers to do the tasks to which the British nation has committed itself or which have been loaded on to its shoulders by the war. We are gravely concerned with the urgency of this problem and we should be failing in our duty as a "Working Party", which contains members specially charged to take the national point of view, if we did not call attention to it. We look ahead to a tremendous national task. We see our commitments to much higher standards for our people at home in wages, holidays with pay, children's allowances, and social security; to much heavier expenditure on non-productive services such as education and defence; to a great housing programme. We see the immense arrears of maintenance and renewal of industrial plant to be made good as well as war destruction to factories and houses, and vast external debts on current account to be settled. Above all we see the urgent problem of exports, needed to pay for imports without which we cannot live, the difficulties of paying for which will be immensely increased, on the one hand, by the loss of most of our foreign investment income and the probable diminution in our invisible exports, and, on the other hand, because many of our former export markets will have been changed by industrialisation during the war. There is only one way to get through these difficulties and to make the national income large enough to meet all our commitments. That is by work—hard, well-planned work, making the most of every modern improvement of science and technology to increase production. British industry needs a great spurt in efficiency and flexibility as well as a transformation in many of its old activities. Above all man-power must be used to the best advantage. If the cotton industry is short of man-power to-day, that fact must be seen in the setting of a general shortage of national man-power for national tasks. Whatever numbers of recruits it may be found possible to attract to the cotton industry it would be contrary to the national interest that an ounce of available man-power should be wasted. We trust that our Report will be read with an appreciation of the urgent national problem.

CONCLUSIONS

21. The broad survey made in this chapter points to a number of questions and conclusions which are important for our purpose.

(*a*) *The true meaning of Lancashire's troubles in the inter-war years.*

These troubles were due mainly to the tremendous contraction forced upon the industry by external developments quite beyond its own control. The primary cause of its loss of export trade was not its own " inefficiency ", though the effects of this loss and the conditions which it created have militated against maintenance of progressive efficiency. That is a matter for serious concern. But if there is a case for criticism of the past it rests most clearly on two grounds :—

(i) That the difficulties ahead were not foreseen and that the temporary prosperity after 1918 was not used to prepare for these, but squandered. Even if the main contraction could not thereby have been avoided, the evil consequences could have been greatly reduced.

(ii) That the adjustment to the new conditions was painfully slow (still uncompleted when the 1939 war came) and that the organisation of the industry—adapted to the expansive conditions before 1914—was not fitted to the post-1918 conditions.

The worst consequences of the inter-war troubles were expressed in terms of unemployment and under-employment which meant not only human suffering and demoralisation, but vast national economic loss. That these effects were not better countered gives ground for a charge not so much against the cotton industry as against national policy. The cotton industry itself could not have found employment for its surplus labour. But, if there had been a wise collaboration between the organising power of the State and the initiative of a vigorous industry, results might have been very different.

(*b*) *The need after a long world war to look forward, not back, to prepare for great changes and unknown developments.*

There are certainly great changes to be faced now. To think in terms of pre-1914 care-free expansion or pre-1939 restrictive self-defence will produce equally unsuitable attitudes in which to face 1946 and the future. The main changes to be faced are :—

(i) *The changes in the labour position.*—Two questions arise :—

1st : How can the industry which, up to 1939, relied on an over-plentiful, highly skilled low-paid labour force, produce successfully and at competitive prices when it has to work with a limited, highly paid labour force ?

2nd : How can the industry achieve maximum production at competitive prices with a minimum demand on the national labour force (since the shortage of labour for cotton has to be considered in a setting of a general national shortage of industrial labour) ?

(ii) *Scientific advance.*—We stand at the threshold of a new scientific industrial era. There are many unknown possibilities in the field of new fibres and synthetic products generally. The Lancashire textile and textile machinery industries must look wider than cotton, and look for a new chance of progress through the utilisation of scientific knowledge.

(iii) *Changes in external conditions.*—Whatever the temporary effects may be of Japan's collapse, new textile industries are growing everywhere. Therefore to keep a place in external markets is going to require not less but more skill in interpreting consumer demand, in exploring market opportunities, and in adapting production to meet them.

(*c*) *The futility of the attempts to find a satisfactory remedy for the industry's troubles as long as capacity, both in plant and labour, was entirely out of balance with market outlets.*

Two special points require notice in connection with this :—

(i) The lesson of past experience in case troubles were to arise from the same cause in the future.

(ii) The human suffering involved in the long drawn out process when an industry, faced with a major change in its economic setting, is left to readjust itself by means of the struggle for survival of its individual units.

(*d*) *The need to devise effective means for getting joint action on matters affecting the industry as a whole.*

The inter-war years have shown that in the conditions of the modern world many questions must arise on which there is a need for " common thinking and co-ordinated action " by the industry. The Report of the 1930 " Clynes Committee ", which used these words, said that " Lancashire must choose ". Hitherto there has been no effective entity of " Lancashire " which *can* choose a general course of action. A question of key importance is whether from the promising start made by the war-time Cotton Board there can be developed a central organisation able to speak and act effectively for the industry.

(*e*) *The need for inter-action between the Government and the industry by some method which will ensure that the industry's activities fit in with the national interest without hampering the initiative and incentive of individual enterprise.*

Experience after 1918 demonstrated that need. It continues now; but the problem is changed. The problem after 1918 was how to handle an inevitable contraction of the industry with the minimum human suffering and economic loss. The problem this time is not how to minimise the effect of a major contraction in demand, but how to get the industry as a whole organised, balanced and equipped for the maximum healthy expansion and for adjusting itself to new conditions with sufficient speed and thoroughness to achieve the best that is possible in the way of productivity of labour, quality of goods and economy in cost. For achieving the best use of the available resources to these ends, there is a need to consider how the driving force of individual enterprise can pull together with the power and resources of the Government.

Chapter II

THE PRODUCTS OF THE INDUSTRY

1. We must start with the elementary question—"What *is* the cotton industry?" That is to say, "What does it produce?" Beyond this of course there lies the further question, "How should it be equipped and organised to produce in the future?" But that in any case must be largely governed by the position which it has been able to create for itself in the past. The first elementary question, therefore, needs answering. Otherwise there can be no realistic consideration of any of the issues which we have to consider—organisation, labour supply, equipment, marketing policy, etc.

2. Taking the industry as it has hitherto developed, it must be recognised that its products are complex and varied. To quote from an article by a well-known merchant converter, it "enters into almost every part of life . . . washing frocks and tarpaulins; medical gauze and tyres; muslins; sail-cloths; socks; printed voiles and ropes . . . It has a thousand uses and a myriad users".

3. This complexity means that simple generalisations may be very misleading. But it must not be allowed to confuse the issue. It does not mean that there cannot be an orderly working of the industry, in which each piece plays its part effectively and without waste. It only makes the problem of ensuring such an orderly working more difficult and, for that reason, makes it all the more necessary that an accurate record of facts should be maintained and that scientific method should be applied to the study of the industry's problems.

4. For example, one of the most important practical questions on which many of our recommendations must depend is how far Lancashire products are suitable for bulk production, and how much of the field should be left open for variations in style and fashion. That is a question which arouses heated controversy; but it is one which must vitally affect policy as regards organisation and equipment, and it cannot be sensibly answered except in relation to particular classes of product. To give a simple illustration, it is obvious that variability of style and design is more important for ladies' dress fabrics than it is for articles like sheets, towels, surgical dressings or tyre fabrics. We therefore felt the need for some survey of the final consumer demand for Lancashire textiles, showing what proportion of the total product normally falls into various classes of goods. We were informed that a full survey of end uses had been made in the United States, but none for this country. That is a good illustration of the need for more complete factual knowledge.

5. We have endeavoured to get a reliable estimate, and the figures given in the tables referred to below are based on a study specially completed at our request by the Cotton Board, whose officers have been most helpful to us in this matter.

In Table 3 the total production of yarn has been followed out into its various uses and in the final column a figure is given showing the percentage of weight of yarn which goes into various purposes.*

* The figures in the tables have been made up in the following way. The figure taken for the total production of yarn is the average for 1935–7 and the analysis of that portion which is used otherwise than for woven cotton goods is based on the Census of Production figures for 1935–7 combined with the trade returns for exports. The analysis of the uses of woven cotton cloth is also based on Census of Production figures, but supplemented, as far as concerns some of the detailed subdivisions, by the results of an enquiry made by the Cotton Board covering the year ending March 31, 1940.

TABLE 3

END USES OF COTTON YARN

Estimated Pre-War (1935–7) Production and Distribution

		Yarn equivalent million lb.	Percentage (by weight) of total yarn produced
AVERAGE ANNUAL OUTPUT OF COTTON YARN		1,300	100
Utilised as shown below :—			
A. OTHER THAN IN WOVEN COTTON GOODS			
Export—Yarn		151	
Thread		16	
Knitted, cordage, etc.		20	
Woven mixture fabrics		10	
Total		197	15·2
Home — Thread		7	
Knitted goods		72	
Lace		9	
Small wares, ropes, tyres, etc.		65	
Woven mixture fabrics		37	
Total		190	14·6
Total yarn for uses other than woven cotton goods		387	29·8
	million sq. yds.		
B. IN WOVEN COTTON GOODS FOR EXPORT			
1. Piece goods	1,900	380	29·2
2. Other woven goods (household textiles and apparel)	200	50	3·8
Total woven cotton goods for export ...	2,100	430	33·0
C. IN WOVEN COTTON GOODS FOR HOME USE			
1. Apparel cloths	700	155	11·9
2. Household textiles, etc.	495	165	12·7
3. Surgical dressings, etc.	250	18	1·4
4. Industrial and other uses	375	145	11·2
Total woven cotton goods for home market	1,820	483	37·2

6. It can be seen from the above table that, if woven mixture fabrics are excluded from the items under heading A, about 26 per cent. in weight of the total yarn produced is sold as yarn to other industries. The importance, however, of variation in style and design and of the services of merchants skilled to judge taste and fashion is normally stressed in connection with piece goods.

7. It is necessary, then, to analyse the remainder of the woven cotton piece goods and consider how far these are suitable for bulk production.*

8. For cotton piece goods sold in the home market, Table 4 gives a further breakdown with an estimate of the proportion of each class of goods which can reasonably be regarded as suitable for bulk production. This shows that,

* By bulk production we mean the use of machinery without frequent stoppages for changes of product. For instance, in weaving, the minimum run put into work at one time should normally be the yardage necessary to give " a full set of beams " (see para. 13 below).

apart from industrial cloths, which for present purposes we regard as all adapted for bulk production, 1,120 million yards, or 78 per cent. of the remaining 1,445 million yards sold in the home market, could be produced in bulk lines.

TABLE 4

WOVEN COTTON GOODS FOR HOME MARKET

Type of Cloth	Total Output	Suitable for Bulk Production	
	mill. sq. yds.	per cent.	mill. sq. yds.
Surgical dressings	250	90	225
Sheets, pillow cottons, etc.	150	90	135
Towels and towelling	75	90	67
Blankets	65	75	49
Handkerchiefs	35	75	26
Cotton furnishing fabrics	125	50	62
Others	45	—	—
Apparel cloths			
Coloured-woven flannelette	35	80	28
Bleached, dyed or printed flannelette	40	90	36
Shirtings (other than flannelette)	132	75	99
Dress fabrics	85	60	51
Domestic overall cloths	75	90	67
Industrial overall cloths, drills, etc.	75	90	67
Gabardines	30	90	27
Corduroys	2	—	—
Velveteens	6	—	—
Lingerie cloths	4	—	—
Corset cloths	12	50	6
Cloths for oiling or rubberising	36	90	32
Linings	150	85	127
Scrim	18	90	16
Total of above	1,445	78	1,120
Industrial cloths	375	100	375
TOTAL PRODUCTION FOR HOME USE	1,820	82	1,495

9. For piece goods sold in the export markets a similar classification is difficult; but an analysis of the position is given in Table 5 (pages 20–21). This gives another breakdown of the figures prepared by the Cotton Board, showing the types of cloths and the yardage produced for export as well as for home uses. This table indicates the items which appear to us to be such that minor differences in weave are not likely to interest the consumer and which are therefore particularly suitable for long runs. On this basis of calculation the amounts suitable for bulk production are 1,299 million yards (62 per cent.) of the export production combined with 1,128 million square yards (78 per cent.) of the "other home uses" production, and 375 million square yards (100 per cent.) of the home industrial production, making together a total of 2,802 million square yards or 71 per cent. of the total piece goods production.

10. As explained below, we do not seek to put too much weight on the method used in these calculations. In one sense they have been made on a conservative basis, since such cloths as poplins and flannelettes have been excluded from the "bulk production" class, and only half the production of print cloth has been included. The broad results, however, seem to be confirmed by the experience gained from working under the

war controls. If the whole of the Lancashire cloth output is taken as falling into two broad classes—" staple " and " fancy " lines—then it can be said that the line drawn by the Control of the Cotton Industry (No. 32) Order, 1942,* makes a fairly accurate demarcation between the two. This Order controlled the price of most common or " staple " constructions (e.g., plains, cambrics, twills, sateens, etc.) and our evidence indicates that these cloths represent about 75 per cent. of the total woven cloth output.

11. Another possible method of calculation is as follows: if 26 per cent. in weight of the yarn produced is used for purposes other than woven piece goods and if three-quarters of the remaining 74 per cent. is used for cloths suitable for staple or bulk production, it will be seen that only about 19 per cent. in weight of the total yarn produced goes into fabrics for which a wide measure of variation in style and design is necessary.

12. We must make it clear that we do not put forward any of these figures as strictly accurate. Before such a claim could be made, it would be necessary to have a much more comprehensive record of factual data than has been available to us. But we are satisfied that, from the figures which we have given and the rough method of analysis which we have used, it is justifiable to draw the conclusion that there is ample scope for organising a great part of the cotton industry on bulk production lines.

13. There are, moreover, several other points which must be borne in mind. We believe, first, that, even in the range of goods where great variety is required, there is room for increasing the use of the finishing processes to obtain the required variety instead of insisting on variations in cloth construction. Secondly, the mere fact that variety is required does not necessarily mean that orders for production cannot be passed back to the producers in a form which makes economical methods of production possible. For that purpose it is not necessary to go right over to what is ordinarily understood by " mass production". For example, as regards weaving, the main essential for economical production is to cut out lengths of runs which are insufficient to give " a full set of beams ". The minimum length of run imposed by this criterion varies according to the number and count of the warp threads involved; we understand, for example, that the minimum figures on this basis would be 36,000 yards for 60's warp count and 8,000 yards for 12's warp count. We do not suggest that such figures would be regarded by manufacturers as fully satisfactory minima for all purposes, and we only mention them here by way of illustration to support the broad conclusions stated in the next paragraph. This whole matter of the connection between size of orders and economical working is more fully examined in Chapter VII.

CONCLUSIONS

14. The broad conclusions which we draw from the survey in this chapter may be summarised as follows :—

(*a*) The production of the " cotton industry " is extremely complex and varied, but *a very large proportion of it is suitable for bulk production methods.*

(*b*) *Much fuller statistical records should be kept* of the production and end uses of cotton textiles so as to give a foundation on which to base methods suitable for the industry as a whole.

(*c*) *Even for the class of products for which a wide range of variety is essential the maintenance of such variety is not necessarily inconsistent with economic production runs.* The need for watching the situation and seizing opportunities for helping the producers reinforces the need mentioned under (*b*) for better statistical records.

* S.R.O., 1942, No. 670.

TABLE 5

ANALYSIS OF EXPORT

(1) Class	(2) Weave	(3) Yarn Counts	(4) Widths
			Inches
COMBED FABRICS			
*Lawns and similar fabrics	Plain	50–120 single and double	36–50
*Twills and gabardines	3 shaft and up	12–80 single and double	28–64
Poplins, Plain	Plain and fancy	18–100 single and double	28–42
Shirtings	Plain and fancy	30–60 single and double	28–40
CARDED FABRICS			
*Duck—15 oz. and lighter per sq. yd.	Plain	Doubled warp and weft	All
*Duck—15 oz. per sq. yd. and heavier	Plain	Doubled warp and weft	All
*Single and double weft flat duck (all weights)	Plain	Single warp, single and doubled weft	All
*Chafer fabrics	Plain	Doubled and single warp and weft	36–60
*Tyre cord fabric	Plain	Cabled warp, single weft	36–60
*Osnaburg	Plain	Up to 12 single	30–72
*Sheeting (coarse)	Plain	13–21 single	36–60
*Sheeting (medium)	Plain	21–28 single	36–60
*Bed sheeting	Plain and twill	8–30 single	50–108
*Drills, twills and sateens (not yarn dyed)	3 shaft and up	8–32 single	28–70
†Print cloths, Italians, hair-cords, etc. (not yarn dyed)	Plain, twill, sateen, fancy (mainly plains)	28–42 single	27–52
*Surgical bandage and cheese-cloth, scrim	Plain	28–56 single	30–42
*Denim, cottonade trouserings, covert dungarees (yarn dyed)	Twill	7–20 single	28–36
Chambray and shirting, etc.	Plain and twill	—	28–36
Flannelette (yarn and piece dyed)	Plain and twill	14–34 single	28–36
Shirting flannelette (yarn dyed)	Plain and twill	8–32 single	28–36
Ginghams, regatta, zephyrs, tartans, etc. (yarn dyed)	Plain, twill, fancy	16–42 single	27–40
Moleskins and suedes	Plain and twill	10–24 single and double	28–40
Corduroy (including Bedford cords)	Fancy	Various	28–40
Velvets, velveteens and cords	Plain and twill	18-42 single and double	18–48
Tickings (yarn dyed)	Twill and fancy	12–24 single and double	32–64
*Blankets — all cotton and blends containing up to 25% wool	Plain and twill	Various	50–90
*Towels and towelling	Terry, huck, plain	5–24 single and double	—
Miscellaneous	Plain and fancy	Various	—

* Indicates items which appear to be especially suitable for long runs.

† 50 per cent. suitable for long runs.

AND HOME TRADE CLOTHS

(5) Production for Export	(6) Production for Home Trade		(7) Typical End Uses
	Industrial uses	Other	
million sq. yds.	million sq. yds.	million sq. yds.	
165	70	60	Tracing cloth, typewriter ribbon, oil-proofed fabrics, women's clothing, handkerchiefs, infants' wear
20	3	30	Raincoating, proofing cloth
95	3	80	Shirts, dress goods, underwear
18	12	—	Bags, covers, tentage, tarpaulins, sailcloths, belting and other industrial and agricultural uses
4	10	—	
—	2	—	Tyres
—	30	—	Tyres
25	20	25	Bags, wrapping, apparel
215	70	80	Bags, pocketings, apparel
230	80	100	Coated fabrics, laminated plastics, industrial uses, gummed tape, apparel
95	8	150	Household
180	30	250	Work clothing, industrial uses, linings, boot and shoe linings, corset cloths
555	12	80	Dress goods, shirts and underwear, pyjamas, handkerchiefs, bags, linings
36	10	250	Medical supplies, agricultural uses, cheesecloth, industrial uses
18	—	8	Men's and women's work clothing, dungarees
27	—	—	Work shirts and blouses, infants' wear, play suits
180	—	105	Night wear, infants' wear
13	—	15	Work shirts, sports shirts
107	1	15	Dresses, infants' wear, nurses' uniforms
4	—	2	Work and sports trousers, work uniforms, work shirts
1	1	5	Apparel
6	—	10	Children's and women's wear, slacks
36	—	15	Pillows, mattresses
1	—	65	Household
15	—	70	Towels, infants' napkins, etc.
54	13	30	Spreads, drapes, upholstery

Chapter III

THE RAW MATERIALS

1. We turn next to the raw materials on which the industry has to work. Its task is to spin, weave and in other ways process cotton and such other fibres as can suitably be mixed with cotton or processed with its machinery.

2. Reference has already been made to the growing importance to the cotton industry of rayon and other new fibres and to the fact that some firms in the industry either regularly or occasionally use other natural raw materials such as wool. Cotton is, however, still predominant as the following tables show.

TABLE 6

SPINNING AND DOUBLING : MATERIALS USED Million lb.

	Raw Cotton	Cotton Waste	Rayon Staple
1912*	2,201·8	..	..
1924†	1,394·8	..	..
1930†	1,244·0	..	..
1935	1,283·0	130·9	6·8
1937	1,433·7	138·1	19·6
1940	1,350·7	159·9	..
1944	773·9	149·9	27·3

.. Not available. * Season ending August 31. † Season ending July 31.

TABLE 7

WEAVING : YARNS USED Million lb.

	Cotton	Rayon Staple	Rayon Filament	Woollen and Worsted	Silk
1935	851·5	3·4	19·1	1·3	·04
1937	933·9	13·5	24·6	1·6	·05
1940	943·8	..	..	..	..
1942	584·0	27·0	43·2	..	..
1944	480·0	30·7	45·2	..	..

.. Not available.

3. It will be seen from Table 6 that although the use of rayon staple is increasing, it represented in 1944 little more than one-fortieth (by weight) of the raw materials used by the spinning and doubling sections. In 1937, before the balance of the industry was distorted by war conditions, rayon

staple represented no more than 1·2 per cent. of the total raw material used. The weight of raw wool used in these sections of the cotton industry is not separately recorded and does not appear in the tables, but the total weight of woollen and worsted yarn recorded by the Census of Production and the Import Duties Act Inquiry as produced by the cotton spinning and doubling industry in 1935 and 1937 was less than 250,000 lb. in each year.

4. The figures for 1935 and 1937 in Table 7 are drawn from the Census of Production, 1935, and the Import Duties Act Inquiry, 1937, and are compiled on a narrower definition of the term "cotton industry" than that used by the Cotton Control in compiling the figures for 1940, 1942 and 1944. If figures compiled on the wider definition were available for the earlier years they would increase the relative importance of rayon. It is, however, unlikely that the total consumption of rayon (including both filament yarn and rayon staple yarn) by the weaving section ever exceeded 80 million lb. in any pre-war year, or reached as much as 8 per cent. of the total weight of yarn consumed. By 1944 the proportion of rayon yarn used had risen to nearly 14 per cent. but it must be remembered that special conditions arising out of the war contributed to this relative increase.

1. NATURAL FIBRES

A. Raw Cotton

5. The U.K. cotton industry classifies raw cotton under two main heads, Egyptian-type cotton and American-type cotton. No hard and fast line can be drawn between the two, but Egyptian-type cotton is for the most part of longer staple than American-type cotton and is used for spinning into finer yarns. It is broadly true to say that Egyptian-type cotton is not less than $1\frac{1}{8}$ ins. staple and is mainly used (*a*) where special qualities are required, e.g., tyre yarns and yarn for hosiery, and (*b*) for counts finer than 50's. Relatively little of the American-type cotton used in this country is more than $1\frac{1}{8}$ ins. staple, nor is this type of cotton much used for counts of yarn above 50's.

6. Egyptian-type cottons come mainly from Egypt, the Sudan, Peru and the West Indies. Most other cottons are classed as American-type.

7. The following tables give details of imports of raw cotton by staple and mill consumption of cotton by growths.

TABLE 8

RETAINED RAW COTTON IMPORTS : BY STAPLE

	$1\frac{1}{4}$" and over		Over $\frac{7}{8}$" and less than $1\frac{1}{4}$"		$\frac{7}{8}$" and under		Total	
	Mln. lb.	Per cent.	Mln. lb.	Per cent.	Mln. lb.	Per cent.	Mln. lb.	Per cent.
1936	207·1	14	1,144·3	77	133·6	9	1,485·0	100
1937	180·1	11	1,268·6	79	151·8	10	1,600·5	100
1939	184·2	15	930·0	75	123·1	10	1,237·3	100
1940	128·6	9	1,160·4	82	117·2	9	1,406·2	100
1944	106·9	13	649·3	81	50·7	6	806·9	100

TABLE 9

MILL CONSUMPTION BY GROWTHS

Million lb.

Supplying Country	1912*	1920†	1924†	1930†	1935†	1937†	1940	1944
U.S.A. ...	1,867·0	1,489·0	837·5	737·0	524·5	631·0	668·0	301·7
India and Burma ...	17·6	22·6	78·4	73·3	133·4	166·9	115·6	51·5
Egypt ...	269·3	318·2	337·7	216·7	260·6	280·8	259·4	163·1
Sudan ...	..	..	..	31·3	45·9	64·5	56·0	60·5
Br. W. Afr.	..	..	..	11·0	18·2	11·6	..	8·3
Br. E. Afr.	..	..	..	22·6	15·0	18·0	..	16·8
Peru ...	..	..	91·4	49·1	64·2	67·0	77·9	15·2
Brazil ...	..	..	21·6	68·9	135·0	117·5	98·8	93·9
Argentina	..	..	..	19·1	27·5	41·8	..	..
Russia ...	..	..	..	..	0·3	1·8	..	6·7
Others ...	48·0	56·4	28·2	15·0	18·0	12·3	75·0	56·2
Total ...	2,201·8	1,886·3	1,394·8	1,244·0	1,242·6	1,413·2	1,350·7	773·9

.. Not available. * Season ending August 31. † Season ending July 31.

8. The extent to which the relative importance of the supplying countries has changed over the years 1912–44 can be seen from the following table (derived from Table 9) showing the percentage of total mill consumption supplied by them.

TABLE 10

RELATIVE IMPORTANCE OF GROWTHS : 1912-44

Per cent. of Total.

Supplying Country	1912	1920	1924	1930	1935	1937	1940	1944
U.S.A.	85	79	60	59	42	44	49	39
India and Burma	1	1	6	6	11	12	9	7
Egypt	12	17	24	17	21	20	19	21
Sudan				3	4	5	4	8
British East and West Africa	2	3	10	3	3	2	19	3
Others				12	19	17		22
Total	100	100	100	100	100	100	100	100

9. The percentages of the various growths consumed in 1940 and 1944 were, of course, affected by shipping difficulties and other circumstances arising out of the war. For the inter-war years the outstanding features of the table are the decline in the proportion of U.S.A. cotton consumed, the expansion in the consumption of " other " growths (principally Brazilian and Peruvian) and the increasing but still small proportion of our raw cotton needs which were met from Empire-sources. In 1937 India and British East and West Africa together provided 14 per cent. of our consumption. If the Sudan is included, the total is 19 per cent. India is the second largest producer of cotton in the world and produces about one-fifth of the total world crop but her exportable surplus, after supplying the needs of the Indian mills, was for the most part of relatively short staple and was not very well suited to the needs of this country. India's most important market for raw cotton was Japan. The production of longer staple cotton in India was making progress

before the war, and this improvement, combined with the efforts of the Lancashire Indian Cotton Committee established in 1934, led, as Table 10 shows, to a marked increase in the consumption of Indian cotton by the U.K. industry, although the amount still represented only about an eighth of the total.

10. Cotton growing in the Empire and in the Sudan has been stimulated and assisted by the British Cotton-Growing Association and the Empire Cotton Growing Corporation. The British Cotton-Growing Association was set up in 1902, at a time when fluctuations in cotton prices were causing spinners considerable anxiety. Its purpose was to foster cotton growing within the Empire on lines which would assure to the cultivator a fair price while protecting the user against speculation. After 1918 exchange difficulties and the problems of trade balances gave an added stimulus to this policy and the Empire Cotton-Growing Corporation was established in 1921 to supplement the work of the B.C.G.A. by undertaking research and other non-trading activities. The Corporation was financed partly by a Government grant of nearly £1,000,000 and partly by a levy on raw cotton delivered to spinners, paid voluntarily up to 1923, after which it became enforceable under the Cotton Spinning Industry Acts until 1940, when it was merged in the annual levy collected under the Cotton Industry Act of that year. In collaboration with the Governments of the countries and territories concerned the B.C.G.A. and the E.C.G.C. did much to improve the quality and staple of cotton, and to provide better marketing facilities in India, the Sudan, Australia, East and West Africa and the West Indies. In recent years Indian mills have been consuming increasing quantities of East African and Sudan cotton.

11. The sources of supply of raw cotton open to the Lancashire textile industry in the post-war world may be substantially different from those available up to 1939. Difficulties about dollar exchange may increase the economic need for reducing Lancashire's dependence on American cotton. India is likely to remain a substantial exporter of raw cotton in spite of the development of her own textile industry and it may be that, with Japan no longer able to purchase Indian cotton on the pre-war scale, Lancashire will be able with advantage to absorb greater quantities of Indian cotton in return for India taking substantial quantities of Lancashire's manufactures.* These questions lead us into a field which we have been unable fully to explore. Many questions arise involving matters of high policy in the matter of international exchange and trading arrangements. But these are issues which must seriously affect the future of the Lancashire textile industry, and our review would be dangerously incomplete if we made no reference to them. We hope that a plan for generous international co-operation in expansive trade policies will be evolved at the forthcoming international conference and that it will lead to effective action. Unless however this happens, it would be unrealistic not to recognise that, in the face of the new and very difficult conditions which lie before this country, national policy may have to be framed in ways which may affect the raw materials available to the industry. Not only may the import of one particular type of cotton suit the national economic needs better than another, but these needs may perhaps weigh the scales in favour of

* The principle of reciprocity was recognised in the U.K.-India Trade Agreement of 1939 This Agreement provided that the duties on U.K. piece goods entering India could be varied within certain limits, according to the volume of such imports, and that if the U.K. imported less than stated quantities of Indian cotton the volume of India's imports of U.K. piece goods should be deemed to be increased by 25 million yards for every 50,000 bales of cotton deficiency for the purpose of deciding whether the Indian import duties should be varied.

increasing the use of artificial fibres by the Lancashire textile industry. We understand that, roughly speaking, for the cotton group as a whole the import content of exports was, in pre-war conditions, about 25 per cent. in value, as compared with only about 5 per cent. in the case of rayon goods or about 15 per cent. on the average for all exports.

12. The considerations to which we have briefly referred indicate possible ways in which the operations of the industry may be greatly affected by national economic policy. It is therefore of great importance that the industry should have the earliest possible indication of what that policy is likely to be. It would be most unfortunate if it were to be confronted with a sudden unsuspected change affecting its raw material supplies.

13. Another factor which may lead to some modifications of Lancashire's demand for the various types of cotton is the change in the labour situation in the industry. This matter is developed in more detail in Chapters V and VI of this Report, but it is not entirely irrelevant to a discussion of the industry's raw materials, since the output of yarn obtainable from a given labour force can to a certain extent be increased by improving the quality of the raw material upon which it operates. As the Platt Report points out, the higher output per man-hour of American spinning mills as compared with British mills is achieved in part by the use of a longer staple cotton.

> " It is probably true to say that British cotton spinning practice is based on the principle of making the maximum use of the cotton and spinning technique, i.e., spinning to the economic limit of staple. In America, on the other hand, the principle is one of minimising labour and plant and, to this end, an increase in staple length can make a useful and important contribution." (Platt Report, p. 11.)

The pre-war British practice of spinning " to the economic limit of staple " was no doubt justified in the economic circumstances which then obtained, when labour was abundant and relatively cheap, but in future the relative importance of the various factors contributing to the cost of production in British mills will be altered if labour is scarce and wage rates are much higher than before the war. In other words, conditions in this country will tend towards the conditions which have obtained in America, and spinners will be forced to consider to what extent these changed conditions require the use of better cotton than they were accustomed to use previously.

Organisation of the Raw Cotton Market

14. Another aspect of the raw materials supply question is of fundamental importance—the fluctuations in market prices and the methods for covering the market risk. The industry's operations are subject to two kinds of speculative risk—risk in regard to varying market outlets and risk in regard to quantities and prices of raw materials. If it is to operate with confidence it must in regard to the latter have a reasonable assurance of stability or at least of protecting itself against such a degree of uncertainty as would convert industrial operations into a commercial gamble. It is important to realise how wide have been the fluctuations in raw cotton prices in the past. It is often thought that these were a special feature of the disturbed conditions in the inter-war period. The total fluctuations as between one year and another were indeed very much more violent in that period; but the fluctuations within each year have always been serious. That can be seen clearly from the following table which covers the period 1906–1938 and gives the highest and lowest Liverpool spot prices in each year for American middling cotton, together with the percentage of fluctuation between the two (i.e., the difference

between the highest and lowest quotations calculated as percentage of the former; if the calculation had been made the other way round, to show the difference as a percentage of the lowest price, the percentage fluctuation would appear much larger).

TABLE 11

MIDDLING AMERICAN COTTON

Liverpool Spot Price per lb.

Year	Highest	Lowest	Fluctuation	Year	Highest	Lowest	Fluctuation
	d.	d.	per cent.		d.	d.	per cent.
1906	7·52	5·31	29	1924	18·18	12·11	33
1907	7·57	5·16	32	1925	13·63	9·17	30
1908	6·92	4·80	31	1926	10·36	6·30	39
1909	8·50	6·77	20	1927	12·67	9·17	28
1910	8·42.	6·57	22	1928	11·14	9·72	13
1911	7·53	4·92	35	1929	10·66	7·27	32
1912	7·19	6·05	16	1930	7·54	4·56	40
1913	7·96	6·20	22	1931	6·02	3·60	40
1914	6·50	4·20	33	1932	7·20	4·61	36
War years omitted.				1933	7·20	5·06	30
				1934	7·42	6·25	16
1920	27·32	6·38	77	1935	7·66	5·99	22
1921	15·21	8·22	46	1936	8·14	6·12	25
1922	17·13	12·10	29	1937	6·20	4·20	32
1923	21·64	13·25	39	1938	5·91	4·68	21

15. These are very striking figures. It will be seen that, even omitting 1920 as a year still influenced by war disturbances, the price varied from 21·64d. per lb. in 1923 to 3·60d. in 1931. In a world which is still populated mainly by primary agricultural producers and in which the prosperity of manufacturing industry largely depends on their purchasing power, such fluctuations must clearly lead—as they did—to economic disaster. So far as the cotton industry is concerned, its general condition, like that of other industries, must always be affected by world economic conditions, while its particular operations would be a gamble rather than a genuine industrial business if it had to carry all the risks of fluctuations in cotton prices such as those shown in the table. As is well known, the cotton industry was largely able to cover itself against these risks by operating in the Liverpool Futures Market. But, although this possibility existed, it was not always fully utilised nor could all risks arising directly or indirectly from fluctuations in raw cotton prices be avoided. We have not been asked to make recommendations on the controversial question of what should be the future arrangements. We confine ourselves therefore to making the broad observation that the Lancashire industry will not have a fair chance to recover prosperity unless it is able to buy suitable cotton in the cheapest available market and avoid being placed at a disadvantage *vis-à-vis* other countries so far as raw cotton prices are concerned. The importance of exports relative to home trade makes this a vital matter for the Lancashire industry.

RAW COTTON IN WAR-TIME

16. For the purpose of completing our review of the position, we set out in Appendix I* a short account of the system for buying raw cotton which has

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been introduced during the war. Since 1941 the Government, through the Cotton Control, has undertaken the bulk purchase of all cotton, and distributed it to spinners. The working of this system has provided some interesting experience, but a feature which we desire particularly to emphasise is the result to which it has now led. Although the Control is not actually selling at a loss on the average purchase price for its total balance of cotton, Lancashire spinners are at present enabled to buy most of their cotton at prices substantially below current quotations in the open market. We mention this point because there is an element of unreality in the present position and it is important not to be misled by it.

B. Waste Cotton

17. As indicated in Table 6 above, cotton waste represented 9 per cent. of the raw material used by the spinning and doubling sections of the cotton industry before the war. The bulk of the supplies of waste cotton are obtained as a by-product in the course of raw cotton spinning and to a lesser degree from the processes of knitting, weaving, winding and doubling. The bulk of the waste arising from these latter processes is " thread waste ", which is broken up mechanically and rendered into fleece form, suitable for spinning. Waste cotton obtained from the raw cotton spinning processes is classified according to the spinning machinery from which it comes, e.g., " comber waste " is obtained from combing machines and " strips " are obtained from the cards. Some waste, e.g., comber waste derived from high quality Egyptian cotton, is of a quality which compares well with raw cotton and many cotton spinners blend such waste with their raw cotton when the price of waste relatively to raw cotton makes it desirable to do so. The great bulk of the waste cotton used in the cotton spinning industry is used, however, by mills which specialise on the spinning of waste and use machinery which in some respects resembles woollen rather than the ordinary cotton spinning machinery.

18. The relative increase in the consumption of waste cotton in the war years (waste cotton represented nearly 16 per cent. of the total weight of raw materials used in 1944) was due largely to war conditions, in that the activity of the waste spinning mills was rather less severely curtailed by concentration and the shortage of operatives than was the activity of the raw cotton spinning mills

19. Waste yarns are coarse in count—the bulk of production is in counts up to 6's—and are for the most part used for purposes where a full, soft yarn is required and where tensile strength is of little account. Examples are as weft for sheets, cotton blankets, counterpanes, curtain and upholstery fabrics, " fleece " fabrics such as flannelettes and glove and slipper linings, and the pile of terry towels. Waste yarns are also used for mops, cordage and other non-woven goods.

20. Waste spinning seems to have been developed further in the U.K. than in any other country. There are waste spinning mills elsewhere, e.g., in Germany, Czecho-Slovakia and Belgium, but the output of these countries does not rival the U.K. output either in quantity or quality. Indeed, waste spinning has been developed to such an extent in this country that the demand for waste for spinning, coupled with the demand for other purposes such as paper-making, surgical dressings, waddings, etc., substantially exceeds the production of waste cotton by U.K. mills. The deficit is made up by imports, which in 1935 amounted to 55·3 million lbs. and in 1937 to 72·2 million lbs.

21. It may be mentioned that just as raw cotton spinners sometimes use a proportion of waste cotton when prices are favourable so also waste spinners may sometimes use a proportion of raw cotton—usually of short staple.

C. Other Natural Fibres

22. Some spinning mills use other natural fibres such as wool, silk and flax for the manufacture of mixture yarns, and woollen and worsted yarns, silk yarns, and flax yarns are used by some doublers and weavers. Hitherto the total quantity involved has not been such as to constitute a major feature in the cotton industry. Accordingly we do not attempt to review the position in detail, but we think that the possibility should not be excluded of further developments in the use of cotton textile machinery for processing these other natural fibres.

2. ARTIFICIAL FIBRES*

A. Regenerated Fibres

MUTUAL INTERESTS OF COTTON AND RAYON

23. The most important raw material other than cotton used by the cotton industry is the regenerated fibre generally known as rayon. Its importance is likely to increase. It is a manufactured product, and research is constantly extending the producer's power to produce new varieties with new qualities. But if rayon is important for the cotton industry so also is the cotton industry important for the rayon producers. As the following paragraphs will show, the cotton industry has been in the past and still is by far the most important customer for rayon.

24. The manufacture of rayon is not a textile but a chemical process. Rayon reaches the textile industries in either of two forms, as a continuous filament or as staple fibre. Rayon filament, as its name suggests, is manufactured in the form of a continuous thread which is, in effect, already a yarn although it generally requires certain further processes, such as throwing (doubling) and winding before it can be utilised. Rayon staple consists of short lengths of rayon fibre which require to be spun into a yarn in the same manner as natural fibres like cotton and wool. Rayon staple can be cut to any desired length and thus can be supplied in forms suitable for use by cotton spinners, wool spinners, flax spinners, etc. Up to the outbreak of war about 90 per cent. of the rayon staple spun in this country was spun on cotton spindles, but the proportion has since fallen to about 66⅔ per cent. The consumption of rayon staple in the cotton industry has actually increased since before the war (from about 20 million lbs. a year to about 30 million) but consumption elsewhere, notably in the wool textile industry and in the linen industry, has expanded proportionately even more. It is probable that the natural expansion of the consumption of rayon staple in the cotton industry was checked by the need to use labour and plant for spinning cotton for war needs.

25. Rayon yarn, whether continuous filament or spun from rayon staple, finds its principal outlet in this country in the weaving industries. The bulk of

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*We have taken as our dividing line the distinction between "natural" and "artificial" fibres. There is some tendency to confusion as to the meanings of the terms used in connection with all the various new fibres.

There are in the first place "regenerated" fibres, i.e., fibres which need some naturally growing organic compound for the parent substance and depend on vegetable or animal life for their origin. "Rayon," as ordinarily understood, falls under this heading.

Secondly, there are truly "synthetic" fibres, i.e., fibres which are, as it were, made from scratch by a process of synthesis from the elementary substances, most of which are of mineral origin.

Strictly speaking it is wrong to apply the term "synthetic" to the regenerated fibres. Examples of "regenerated" fibres are viscose, acetate, and cuprammonium rayon. An example of "synthetic" fibres is nylon.

In this Report we use the term "artificial" to cover both types of fibres.

the spun rayon yarn and about 60 per cent. of the continuous filament yarn is used for weaving. It is difficult to state exactly what proportion of the rayon yarn used for weaving is woven in the " cotton industry ", since the result depends to some extent upon the interpretation given to that term, but it is usually accepted that, before the war, about two-thirds of the continuous filament rayon used for weaving was woven by the cotton industry. The proportion of spun yarn used by the cotton industry was probably even higher.* This very close association between cotton and rayon is borne out by the fact that the overwhelming majority (probably more than 85 per cent.) of the firms belonging to the Rayon Weaving Association are weavers of cotton as well as of rayon.

26. The consumption of rayon staple by cotton spinners was, before the war, very small in proportion to their consumption of cotton, but it was growing rapidly. Consumption of less than 7 million lbs. in 1935 grew to nearly 20 millions in 1937 and to 30 million lbs. a year during the war. It is known that many cotton spinners are anxious to develop the spinning of rayon in the future. As regards weaving, the total production " for sale " of rayon and mixture fabrics in 1937 was 482 million square yards, or 12·7 per cent. of the comparable figures for cotton piece goods. In 1938, a year of depression, production fell to 426 million square yards but this amounted to 15·8 per cent. of the figure for cotton. The yardage of rayon fabric woven during the war years has shown a heavy fall on account of the shortage of continuous filament yarn which resulted from the loss of labour by the rayon producers ; but there can be no doubt that the output by weavers will expand very considerably as yarn supplies improve.

PROCESSES OF PRODUCTION

27. Continuous filament rayon is made in this country by three different processes—the viscose process, the acetate process and the cuprammonium process. Viscose rayon accounted before the war for about 85 per cent. of the U.K. production and acetate rayon for most of the balance. There are about ten manufacturers, ranging in size from firms employing several thousand operatives down to relatively small firms employing only 2–300 operatives.

28. Production in the years 1929–39 is shown in the following table :—

TABLE 12

U.K. AND WORLD RAYON PRODUCTION Million lbs.

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Continuous Filament—											
U.K.	53	47	53	70	80	89	112	117	120	106	120
World	434	451	500	515	664	773	941	1,023	1,199	990	1,147
Rayon staple—											
U.K.	3	1	1	1	2	2	9	26	33	32	60
World	7	6	8	20	28	52	140	298	619	958	1,084

* The Cotton Board have estimated that, out of an average British production of 113 million lbs. a year of continuous filament yarn in 1937/8, 10 million lbs. were exported as yarn and 62 millions were woven in the cotton industry. The balance was used for such purposes as hosiery, weaving in the silk industry, etc. The Cotton Board has also estimated that, in 1939, 85 per cent. of the total number of looms weaving rayon and rayon mixtures were cotton looms, and more than two-thirds of the output of rayon and mixture piece goods were produced by firms also weaving cotton.

The figures for rayon staple include rayon waste, which accounted for the bulk of the very small production in the earlier years, but an insignificant proportion of the much larger production from 1936 on. Up to 1939 production of continuous filament rayon in the U.K. fluctuated between about 10 per cent. and 13½ per cent. of world production. Since 1939 world production has further increased, while loss of labour to munitions and the Services caused a fall in production in the U.K. from 120 million lbs. in 1939 to about 70 million lbs. in 1943. The table also brings out the remarkable increase in world production of rayon staple up to 1939. Production has still further expanded since then.

29. The main factor in the pre-war expansion was the forcing policy adopted by the governments of Germany, Italy and Japan for the purpose of creating economic self-sufficiency. The U.K. came next after these three, ahead of the U.S.A., and well ahead of France and all other countries. The expansion of U.K. production after 1934 followed the removal of the excise duty from rayon staple. U.K. production was well maintained in 1940 but fell subsequently to an annual rate of about 50 million lbs. This reduction was much smaller proportionately than the reduction in the case of continuous filament rayon, mainly because rayon staple production is very economical of labour.

30. Before the war this country imported small quantities of rayon yarn and straw—just over a million lbs. were imported in 1937 and 623,000 lbs. in 1938. Exports were considerably heavier—13,500,000 lbs. in 1937 and 7,500,000 lbs. in 1938.

Prices of Rayon Yarns

31. A noteworthy feature about rayon supplies is the steadiness of prices. This is due mainly (*a*) to the close organisation of the market, and (*b*) to the fact that the annual supply of rayon yarn and staple fibre is not liable to be affected by climatic variations in the same way as natural fibres like cottons. Only about 10 per cent. of the cost of continuous filament yarn, and about 30 per cent. of the cost of rayon staple is represented by the cost of raw materials (mainly imported), and these are mostly of a nature which has not been subject to violent fluctuations in price like cotton. The following table of certain rayon yarn prices over the years 1934–39, supplied by Courtaulds, Ltd., for the Intelligence Branch of the Imperial Economic Committee, and published by the Committee, provides a strongly marked contrast to the table of raw cotton prices given earlier in this chapter.

TABLE 13

RAYON YARN PRICES

Monthly averages: pence per lb.

Month	75 denier, 18 filament Viscose Warp on Beam, 2,000 ends and over						150 denier, 27 filament Weft Viscose on Pirn					
	1934	1935	1936	1937	1938	1939	1934	1935	1936	1937	1938	1939
January ...	64½	55½	55½	55½	51	51	(*a*)	32	32	32	31½	30
February ...	61½	55½	55½	55½	51	51½	42	32	32	32	31½	31
March ...	61½	55½	55½	55½	51	52	42	32	32	32	31½	32
April	61½	55½	55½	55½	51	52	42	32	32	32	31½	32
May	61½	55½	55½	51½	51	52	42	32	32	33	31½	32
June	61½	55½	55½	51	51	52	42	32	32	33	31½	32
July	55½*b*	55½	55½	51	51	—	36*b*	32	32	33	31½	—
August ...	55½	55½	55½	51	51	—	32	32	32	33	31½	—
September ...	55½	55½	55½	51	51	—	32	32	32	33	31½	—
October ...	55½	55½	55½	51	51	—	32	32	32	31½	31	—
November ...	55½	55½	55½	51	51	—	32	32	32	31½	30	—
December ...	55½	55½	55½	51	51	—	32	32	32	31½	30	—

(*a*) Not available. (*b*) Reduction of Excise Duty by 6d. per lb.

FUTURE DEVELOPMENTS

32. Although during the war the rayon producers were handicapped in their development work they were not entirely precluded from making progress and they are confident that rayon will make great advances as soon as they are able to get fully into their stride. Even during the war new types of rayon yarns have been developed for war purposes, notably high-tenacity yarns, e.g., for heavy-duty motor and aeroplane tyres, parachutes, electrical insulation and industrial belting. These yarns will continue to find industrial uses after the war, especially if their price is competitive with other yarns. In this connection we draw attention to the fact that in the home market continuous filament rayon yarn still carries an Excise Duty of 6d. per lb. Excise duties on silk and rayon were first imposed in 1925. At that time rayon was regarded as a substitute for silk and therefore as a suitable subject for a luxury tax. Since then the prices of rayon yarns and fabrics have been progressively reduced, their use has broadened, and they now supply the everyday needs of large sections of the population. It is in our view entirely out of date to regard rayon as still suitable for taxation *as a luxury* and we regard the tax as a regrettable handicap to the full development of a modern industry.

33. A noteworthy feature of the price trend of rayon staple has been the narrowing of the gap between rayon staple prices and raw cotton prices. Between December, 1930, and December, 1938, the price of 1½ denier 1 7/16 in. rayon staple fell from 27d. per lb. to 10d. lb. (of which 6d. was due to the removal of the Excise Duty). Since the outbreak of war, prices in the United Kingdom have ceased to be the true basis for comparison, but so far as conditions in the U.S.A. are a guide, to-day's price of 25 cents per lb. for viscose rayon staple is actually below that for middling American cotton and the price differential is seen to be even more favourable to rayon staple when account is taken of the considerably smaller loss in spinning of rayon staple as compared with cotton. It is impossible to say whether rayon staple will always be cheaper than cotton but should it be so the effect on the demand for

spun rayon as an alternative to cotton yarn is likely to be very great. Another factor which may be important so far as the United Kingdom is concerned is that the import content (by value) of rayon staple is only a fraction of that of raw cotton.

34. Rayon goods are severely handicapped in international trade by the heavy import duties charged on them in many countries as " luxury " goods. This practice bears especially heavily on the cheaper rayon fabrics, such as spun rayons. The development of rayons would be considerably assisted if tariff classifications of this prejudicial sort were modified to take account of the role now played by rayon.

35. As regards rayon prices in general, we are glad to know from the Rayon Federation that the producers feel that there are good prospects of a steady downward trend over a long term period. As regards volume of production, the producers state that if labour is available they can raise their production of continuous filament yarn, from the present plants, up to 155 million lbs. a year, i.e., nearly 30 per cent. above the pre-war peak. The maximum production of which the present staple fibre plants are capable is about 75 million lbs. The producers have plans in train for building additional capacity for both classes of rayon. We trust that the users, for their part, will be ready to take full advantage of what rayon has to offer.

B. Synthetic Fibres

NYLON

36. Some mention must also be made of nylon, a newer type of development of increasing potential importance. Nylon is a fully synthetic fibre, i.e., it is built up chemically from raw materials of mineral origin. It was developed in America shortly before the war. Its first large scale civilian use in the United States was for hosiery, but during the war the entire output of nylon, in America, Canada and in the United Kingdom, was devoted to direct war purposes. Nylon replaced natural silk for many purposes when silk supplies were cut off by Japan's entry into the war. Although the cotton industry wove large quantities of nylon parachute fabric during the war, the full potentialities of woven nylon cloths for civilian purposes have yet to be explored. There is an unknown future of immense potentialities in the field of truly synthetic fibres. It is satisfactory to note that the companies which hold the British rights for the manufacture of nylon are very considerably extending manufacture of nylon polymer and yarn and should be able, when the new factories are in operation, to provide the cotton industry with adequate supplies of nylon yarn.

37. In the foregoing paragraphs we have attempted to give no more than a bare record of past facts in regard to rayon and other artificial fibres. Looking to the future, the relation between the cotton industry and these new fibres is a matter of the greatest potential importance. Scientific developments in this field have, as we point out in Chapter IX, created a new integrating force covering the whole of the textile industries. All this points to the need for a new outlook.

3. FUEL AND POWER SUPPLIES

38. Fuel and power supplies represent an important element in the raw material cost of the industry, and therefore require a short mention. The following table is based on figures in the report of the Import Duties Act Inquiry for 1937.

TABLE 14

COAL AND ELECTRICITY CONSUMPTION: 1937

	Coal		Electricity Purchased*		Other Fuel
	Tons	£	B.T.U. (Kw-hrs.)	£	£
Cotton Spinning and Doubling	1,655,600	1,691,000	312,893,000	690,000	76,000
Cotton Weaving	725,700	796,000	90,650,000	240,000	63,000
Textile Finishing Trades ...	2,237,800	2,209,000	97,317,000	312,000	174,000
Total	4,619,100	4,696,000	500,860,000	1,242,000	313,000

* Including electricity generated in other works under the same ownership.

39. The figures, as given above, do not exactly cover what is used by the cotton industry as we interpret it. On the one hand, the figures for consumption by the cotton weaving section are, in our view, too small, since rayon-using firms were treated for the purpose of the Inquiry as belonging to the silk and artificial silk industry if the weaving of rayon represented the more important section of the business. The silk and artificial silk industry as a whole used, in 1937, 661,200 tons of coal, costing £640,000, and purchased electricity to the amount of 247,151,000 B.T.U. at a cost of £412,000. Other fuel cost £53,000. On the other hand, the figures for the textile finishing trades are rather too high, since they include the finishing of other textiles besides cotton and rayon.

40. In round figures it can be said that the cotton industry as a whole spent £4½ million on coal, about £1¼ million on electricity and about £300,000 on other fuel in 1937. These are substantial figures, and although they do not represent a very large proportion of the total working costs of the industry, they are quite large enough for fuel and electricity prices to have a serious effect upon its profitability and competitive power. Their significance may be made clear by pointing out that, whereas the cost of fuel and electricity in the spinning and doubling section (£2,457,000) represented about 2·7 per cent. of the value of the gross output of the section, it represented 7·3 per cent. of the difference between the value of the gross output and the cost of textile raw materials used (raw cotton, staple fibre, etc.). So far as the spinners' margins are concerned, it is this latter figure which is important. In the case of cotton weaving (as defined for the Import Duties Act Inquiry purposes) the total cost of fuel and electricity (£1,099,000) represented 1·3 per cent. of the value of the gross output and 3·4 per cent. of the difference between the value of the gross output and the cost of the textile raw materials (yarns). In the case of the textile finishing trades, the cost of fuel and electricity amounted to more than 8 per cent. of the value of work done.

4. OTHER MATERIALS

41. Other materials used by the cotton industry cover a multitude of mill stores such as bobbins and shuttles, sizing materials (mainly starches) for weaving, dyestuffs and other chemicals, packing materials, etc. The total cost of these materials was of the order of £17–18 million in 1937. As a matter of general importance it is clearly essential for the industry to have access to supplies of the highest quality materials, notably dyestuffs, at competitive

prices if it is to maintain the quality of its products. The cumulative effect of price increases, each of which represents only a small proportion of the total costs of the industry, may be very serious. Moreover, price increases in items which are of minor importance over the industry as a whole may have important repercussions in particular markets. It has been represented to us, for instance, that the increased cost of making up and packing for the Indian market is already having unfavourable repercussions.

Dyestuffs

42. We have not been able to undertake any full enquiry into the raw materials included in this section; but we cannot leave the matter without emphasising the importance of the supply of first-class dyestuffs, and the need for maintaining very close contact between the dyestuffs industry and the cotton textile industry. In Chapter IX, dealing with science and the industry, we have called attention to the fact that the two ancient crafts of spinning and weaving have, as a result of modern scientific progress, now become sandwiched between two modern scientific industries—the artificial fibre industry at one end and the dyestuffs industry at the other. The cotton industry must in its methods now get into step with these two advancing industries and keep level with them. Otherwise it may find itself left holding ground which may be high and dry but which will be steadily encroached upon by the rising tide of scientific advance.

CONCLUSIONS

43. Our conclusions from the survey in this chapter may be summarised as follows:—

(*a*) *Features of the past.*—The main points to note are:—(i) The entry of the new artificial fibres. (ii) The decline in the proportion of American cotton used and the increase of imports from South America, India, the British African Colonies and the Sudan. (iii) The importance of cotton waste.

(*b*) *Future influences.*—Several factors may operate in future to produce further changes in the use of different types of cotton and in the relative advantages to the British industry as between cotton and other fibres. Among them are (i) The international balance of trade and payments. (Important features may be, for instance, the general need for increasing the proportion of exports to imports which swings the balance in favour of artificial fibres, or particular factors such as the possible shortage of American dollars or the opportunity for reciprocal trading arrangements with India.) (ii) The labour position in the U.K. industry. Higher wages and shortage of labour will put a greater value on the operatives' time and may force a move towards using better types of cotton or developing other methods for reducing time lost in breakages, etc.

(*c*) *The industry's needs.*—If the British industry is not to be handicapped in its competitive power in export markets it must have: (i) the best possible facilities to obtain raw materials from whatever source of supply may be at any time the most advantageous, and (ii) adequate warning if supplies from particular sources are likely to be affected by international financial and economic relations. The industry should not be suddenly confronted with unexpected changes.

Chapter IV

THE STRUCTURE OF THE INDUSTRY

1. The structure of the cotton industry has been described in many reports. A short account is included here in order to make our survey complete.

2. The main processes in production are :—

Spinning raw cotton, waste or other fibre into yarn.

Doubling or twisting together two or more strands of yarn into a single thread. (For statistical purposes doubling is often treated as part of the spinning section.)

Weaving yarn into cloth.

Finishing the cloth by bleaching, dyeing, printing, etc. The bleaching, dyeing, etc., of yarns are also commonly included among the " finishing " processes.

3. The nature of these basic processes varies considerably according to the type of goods produced. For example, the spinning of fine yarn from Egyptian cotton is markedly different from the spinning of coarse yarn from American cotton, and the weaving of a figured furnishing fabric requires a loom very different from that which is used for weaving a plain cambric. A bleach works designed for fine cloth would be quite unsuited to bleaching heavy canvases. The use, therefore, of common denominators such as the spindle and the loom to describe the size of the industry must not be allowed to create a misleading impression of homogeneity.

4. The producing industry is for the most part organised horizontally, that is to say, individual firms concentrate upon one process, spinning, weaving, or finishing. The separation of function is reflected in a geographical separation. The main spinning centres are Oldham and Rochdale (coarse counts) and Bolton (fine counts) ; the main weaving centres are the Blackburn and Burnley districts (plain cloths), Nelson and Colne (apparel fabrics, etc., including coloured-woven fabrics), and the Preston area (" fancies " and fine plain cloths). Finishing works are widely scattered and are often situated in somewhat remote valleys where there is abundant water supply.

5. While the three main sections of production (spinning, weaving, finishing) are thus organised horizontally, production itself is for the most part detached from distribution. The producers have worked mainly to the orders of " converters " who order the loom-state cloth, decide on the cloth construction and the style of finish and merchant the products. It is the converters as a class who have " called the tune " for production.

6. The foregoing statements must be read as broad generalisations. There is considerable variation in detail. Thus the lines of horizontal demarcation are cut across by several vertical organisations, some of them of considerable size handling all stages of production, conversion and marketing. (In fact a

definite tendency towards vertical integration appears now to be at work either in the form of converters reaching back to acquire manufacturing interests or, conversely, manufacturers taking control over the distribution of their products. This tendency, however, has not been strong enough to bring about a radical change in the sectional structure of the industry.)

7. The following table shows the amount of overlapping between the spinning, doubling and weaving sections of the industry.

TABLE 15

ANALYSIS OF PLANT BY TYPES OF FIRM—1946[1]

Type of firm	No. of firms[2]	Spinning spindles[3]			Doubling spindles	Looms
		Mule	Ring	Mule eq.		
		mill.	mill.	mill.	mill.	000
Spinners	131[4]	14·46	2·69	18·50	—	—
Doublers ...	109	—	—	—	1·25	—
Weavers	922	—	—	—	—	378·2
Spinner-doublers	61[5]	6·72	4·09	12·86	2·00	—
Spinner-weavers	78[6]	0·58	0·80	1·78	—	51·5
Spinner-doubler-weavers ...	46[7]	1·14	2·81	5·35	0·47	61·1
Doubler-weavers	16	—	—	—	0·11	9·3
Total ...	1,363	22·90	10·38	38·48	3·83	500·2

1. The figures in this table are for February, 1946. Figures given in subsequent table relate mainly to earlier dates and therefore do not agree exactly with those shown here.
2. Combines and groups are treated as single firms.
3. Excluding waste spindles.
4. Excluding waste spinners.
5. Including the doubling spindles of eight firms which spin waste only.
6. Including the looms of 51 firms which spin waste only.
7. Including the doubling spindles and looms of four firms which spin waste only.

8. It will be seen from the above table, and the explanatory footnotes, that among spinners (excluding waste spinners) there are 253 separate firms or groups of firms, and that of these just over a half (131) neither double nor weave. These 131 firms possess 48 per cent. of the total spindles (measured in mule equivalents). They have a much larger proportion (63 per cent.) of the total mule spindles than of the total ring spindles (26 per cent.) A third of the total spinning capacity and more than a half of the doubling capacity are owned by firms which combine spinning and doubling, but do no weaving. A further 14 per cent. of the spinning plant and 12 per cent. of the doubling plant are owned by firms who weave as well. In all there are 232 firms which double. Of these almost a half are doublers only, most of whom are small firms, owning between them less than a third of the total doubling spindles. There are 1,062 weaving firms, of which 922 neither spin nor double ; they own more than three-quarters of the total looms. The general picture is that, while spinning and doubling are closely connected, less than a fifth of the spindles and less than a quarter of the looms are owned by firms which both spin and weave.

9. Again the geographical distribution is not entirely rigid. Thus there are weaving sheds in Bolton and Oldham, spinning mills in Blackburn, and in towns like Wigan and Preston spinning and weaving are both done on a substantial scale. The fact, however, that the spinning, weaving and finishing

concerns are in most cases separated from one another by considerable distances (from the spinning mills of Oldham to the weaving sheds of Burnley, for instance, is some twenty miles) must not be overlooked when the physical reconstruction of the industry is under review.

10. One other factor to be taken into account is that, after leaving the spindle, much of the yarn used for weaving undergoes certain ancillary processes (winding, beaming, etc.) the precise nature of which varies according to the type of spindle (ring or mule) on which it is spun, or the type of loom in which it is to be used. These ancillary processes are carried out sometimes by spinners and sometimes by weavers and occasionally by commission winders. Thus the line of demarcation between spinning and weaving cannot be clearly drawn and re-equipment in either section must be related to developments in the other.

1. PRODUCTION

A. Spinning

11. Spinning capacity is usually measured in terms of " mule equivalent " (M.E.) spindles, one ring spindle being treated as equal to one and a half mule spindles. Before the Cotton Spinning Industry Act of 1936 there were no complete official statistics of spindleage. The half-yearly figures of the International Federation of Master Cotton Spinners' and Manufacturers' Associations show an increase from 61·4 million M.E. spindles in 1912 to about 63 million in 1924, but both figures are almost certainly too high. Only about half a million new spindles were installed after 1914, when the total number of actual spinning spindles was probably more nearly 50 million than 60 million. By 1936 the figure had fallen to something like 43 million actual or 48 million M.E. spindles, largely as a result of the concentration policy carried out by the Lancashire Cotton Corporation between 1929 and 1934. Between 1936 and 1939 a further six million spindles were eliminated under the operation of the Spindles Act. The present capacity of the industry is 38·5 million M.E. spindles, or about 33·3 million actual spindles, of which 22·9 million are mule spindles and 10·4 million ring spindles.

12. Spinning mills containing some 14½ million mule equivalent spindles (37 per cent. of the total) were closed under the concentration scheme during the war. A large number of these mills have reopened in recent months, but at the end of March, 1946, mills containing about 3¾ million (mule equivalent) spindles had still to receive permission to reopen.

13. The following table indicates the size distribution of mills (i.e., of the technical units in the spinning section) :—

TABLE 16

SIZE OF SPINNING MILLS—1940

No. of Spindles in Mill (Mule equivalent)	No. of Mills	No. of Spindles in Group (million mule eq.)
Less than 30,000 spindles	60	1·1
30,000–60,000 spindles	103	4·7
60,000–90,000 spindles	90	6·7
90,000–120,000 spindles	112	11·8
More than 120,000 spindles	89	14·8
Total—all Mills	454	39·1

14. Most of the spinning mills are owned by public limited companies. There are five very large "amalgamation" companies, and one or two big groups of mills which work together for various purposes, sometimes under boards of directors largely identical. A number of other important companies own several mills. Firms producing sewing-thread own about 900,000 spindles.

15. The position can be seen from the following two tables:—

TABLE 17

SIZE OF SPINNING FIRMS—1940

No. of Spindles (Mule equivalent)	Firms	Spindles (million M.E.)
Less than 20,007 spindles	23	0·3
20,000–40,000 spindles	38	1·0
40,000–80,000 spindles	78	4·5
80,000–200,000 spindles	110	13·0
200,000–1,000,000 spindles	26	7·1
More than 1,000,000 spindles...	5	13·2
Total—all Firms	280	39·1

The total shown in the above table differs from that shown in Table 15, partly because the tables relate to different years, and partly because, in Table 15, groups of firms are treated as single units.

16. As we have already pointed out, the measurement of size in terms of the common denominator of spindles can create a misleading impression of uniformity. The technical processes vary considerably according to the type and count of yarn which is being spun. For example, the production (in lbs.) per spindle of fine-count Egyptian yarn is only about one-seventh that of low-count American yarn. The following table shows the division of the total spindleage according to type and count of yarn.

TABLE 18

DISTRIBUTION OF SPINDLES BY TYPE OF PRODUCT—1939

Millions.

Counts	American		Egyptian		Rayon	
	Mule	Ring	Mule	Ring	Mule	Ring
Coarse (up to 16's) ...	3·6	0·8	0·2	0·7		
Coarse (over 16s to 26s)...	2·3	3·6				
Medium (over 26s to 48s)	4·2	2·2	2·4	1·1		
Medium-fine (over 48s to 80s)	0·7	0·1	6·9	1·5		
Fine (over 80s)			2·9	0·1		
Total ...	10·9	6·7	12·5	3·4	0·7	0·2

WASTE SPINNING

17. Mills engaged in the spinning of cotton waste are not included in the above figures. In 1939 they comprised some 130 mills with nearly 1,000,000 spindles. About one-third of the waste spindles are owned by firms who

weave as well as spin. thirty-seven mills were closed in 1941 under the concentration scheme; by February, 1946, the number closed had been reduced to 26, containing 128,000 spindles.

18. In 1937, the number of insured workers in cotton spinning (including waste spinning but excluding doubling) was about 160,000. The number of persons on the books of spinning mills at the end of January, 1946, was approximately 92,250.

B. Doubling

19. The yarn doubling process consists (as already mentioned) in twisting two or more ends of single yarn together to form a single thread. Sometimes extra twist is put in single yarn. Fancy yarns are produced by twisting cotton yarns with other yarns, e.g., wool yarns or silk yarns. Doubling is carried out over a very wide range of counts, e.g., 2/140's or even finer yarns are used by the lace industry, while at the other end of the scale 3/8's or 5/8's were used in considerable quantities during the war for heavy canvases. Generally speaking, a doubled yarn of cotton is stronger than a single yarn of equivalent count, e.g., 2/100's is stronger than single 50's.

20. The doubling section comprised, in 1939, 3¾ million spindles, installed in 267 mills and employing nearly 29,000 persons—6,500 males and 22,250 females. A certain number of the mills in which doubling is carried on are mainly engaged in spinning, but the great bulk of doubling is done in separate mills, even though many of the doubling mills are owned by spinning firms.

21. The doubling mills engaged on heavy work were extremely busy during the war, but the section as a whole was reduced in size by concentration. In mid-November, 1945, the mills closed under concentration numbered 98 while there were 18 more which had stopped for other reasons. The running mills contained three million spindles, of which 2,130,000 were actually being worked. There were 750,000 spindles in closed mills. The labour force was 22,400: 5,000 males and 17,400 females.

22. It will be noted that the average size of the doubling mill (14,000 spindles) is much smaller than the average size of the spinning mill. There are a number of doubling units which are ancillaries to yarn-using industries, e.g., the manufacture of sewing-thread and tyres, rather than units of the cotton industry. Some other doublers concentrate upon the production of fancy yarns used for effects in the cotton and wool industries.

23. There is one very large spinning and doubling combine which owns over 600,000 doubling spindles.

24. While the main portion of the doubling mills is located in the Lancashire cotton districts, a substantial number are scattered widely in Yorkshire, Nottingham, etc.

C. Weaving

25. The weaving or " manufacturing " concerns have about 500,000 looms, of which nearly 200,000 are in sheds or portions of sheds closed under the Concentration Scheme. About 4 per cent. of the total are automatic looms.

26. The peak figure for looms was in the neighbourhood of 805,000, and was reached about 1914.

27. It is often difficult to distinguish the technical units (the weaving sheds) from the financial units (the firms). In the following table the " units " referred to are, generally speaking, weaving sheds, but where more than one firm is housed in a shed, each is counted as a unit. The number of very small sheds is, therefore, considerably less than the table suggests. On the other hand, where a firm owns two or more sheds in the same district, they have been treated as a single unit. This makes the number of very large sheds appear larger than it really is. The table is not quite comprehensive of the whole of the weaving section.

TABLE 19 SIZE OF WEAVING UNITS—1940

	No. of Units	No. of looms (000s)
Less than 100 looms	344	17
100–200 looms	275	40
200–300 looms	175	42
300–400 looms	149	51
400–500 looms	121	53
500–600 looms	80	44
600–700 looms	71	46
700–800 looms	60	44
800–900 looms	33	28
900–1,000 looms	33	30
1,000–1,100 looms	30	32
1,100–1,200 looms	12	14
1,200–1,300 looms	11	14
Over 1,300 looms	16	25
Total	1,410	480

28. There are many more firms in the weaving than in the spinning section, and the average size of the units is much less. Most of them are private firms of various kinds—private limited companies, partnerships and especially family concerns. A special feature of the weaving section is that many of the smaller firms do not own the sheds in which they work, but rent " room and power " ; in such cases there are usually several firms to a shed. Before the industry was concentrated in 1941 there were 61 such sheds, containing 69,000 looms. There are no weaving firms comparable in size to the large spinning combines, though some of the spinner-weavers own some thousands of looms as well as a substantial number of spindles. The next table illustrates the distribution of looms, according to size of firm.

TABLE 20 SIZE OF WEAVING FIRMS—1940

	Firms	Looms (000)	Percentage of total	Average number of looms per firm
Up to 200 looms	438	38	7·6	87
200–400 looms	194	56	11·2	288
400–800 looms	253	146	29·2	577
800–2,000 looms	153	177	35·4	1,157
2,000–2,500 looms	13	30	6·0	2,315
2,500–3,300 looms	8	23	4·6	2,901
3,300–6,600 looms	—	—	—	—
6,600–9,400 looms	4	30	6·0	7,509
Total	1,063	500	100	470

29. Numbers of looms do not give a complete picture of the structure of the section, because to weave different kinds of cloth looms of different types and widths are used. In the following two tables the total number of looms is therefore divided, firstly, according to type and, secondly, according to width (or " reed space ").

TABLE 21

TYPES OF LOOM—1939

Type	Number of Looms			
	Ordinary	Automatic	Automatic attachments	Total
Plain	188,097	6,815	963	195,875
Other tappet, 3–5 shafts ...	111,819	5,885	260	117,964
Other tappet, over 5 shafts ...	47,945	373	51	48,369
Dobby	84,478	3,793	32	88,303
Jacquard	22,762	328	—	23,090
Quilt	1,377	—	—	1,377
Towel	7,711	1,040	46	8,797
Other	4,465	93	—	4,558
Total	468,654	18,327	1,352	488,333

TABLE 22

DISTRIBUTION OF LOOMS BY WIDTH—1939

Reed space (inches)	Number of looms
18–30	849
31–36	45,558
37–42	127,171
43–48	141,024
49–54	53,968
55–60	55,796
61–80	51,597
81 and over	12,370
Total ...	488,333

30. The number of insured workers in cotton weaving was about 200,000 in 1937; the number on the books of the weaving firms at the end of January, 1946, was rather more than 108,000.

D. Finishing

31. After weaving, most cotton cloths are finished—a term which in its wider use covers the processes of bleaching, dyeing and printing (including in each case the final process of finishing) as well as the application of the " mechanical", as distinct from " chemical", processes of finishing to cloth, which for some purposes does not require either bleaching or dyeing or printing. It also covers the processes of bleaching and dyeing yarn. The comprehensive term " finishing section " is used to cover the firms engaged in one or more of all these processes, but the section is in fact made up of a number of sub-sections with widely differing techniques and problems.

32. Most finishing is done on commission; relatively few finishers process cloth which is their own property.

33. There are big combines in each of the main sub-sections and a large number of small concerns. The following tables contain information on the size of establishments and firms in the finishing section as a whole :—

TABLE 23 SIZE OF FINISHING FACTORIES—1939

	Number of factories	No. of operatives employed (000)
Less than 25 operatives	190	2·4
25–60 operatives	121	4·8
60–100 operatives	111	8·8
100–200 operatives	107	15·3
200–400 operatives	53	14·2
Over 400 operatives	11	6·6
Total	593	52·1

TABLE 24 SIZE OF FINISHING FIRMS—1939

	Firms	Operatives (000)
Up to 50 operatives	236	4·9
50–100 operatives	97	7·1
Total up to 100 operatives	333	12·0
100–200 operatives	68	9·7
200–400 operatives	29	8·4
400–1,000 operatives	8	4·4
Above 1,000	6	17·6
Total	444	52·1

34. The following table, based on an enquiry carried out by the Cotton Board, indicates the extent to which there is overlapping between the main sub-sections. The enquiry was not addressed to very small firms in the industry, and there were certain other exceptions (e.g., it did not cover establishments in Northern Ireland) but the results include the vast bulk of the capacity in the sub-sections to which the enquiry related.

TABLE 25

ACTIVITIES (BY NUMBER OF ESTABLISHMENTS)

Sub-Section	No. of firms covered by enquiry	B. only	D. only	P. only	Y.P. only	B. & D.	B. & P.	B.D. & P.	B. & Y. P.	D. & P.	D. & Y. P.
Bleaching	67	35	—	—	—	23	1	4	4	—	—
Dyeing	127	—	80	—	—	23	—	4	—	13	7
Printing	51	—	—	33	—	—	1	4	—	13	—
Yarn processing	156	—	—	—	145	—	—	—	4	—	7

B. = Bleaching, D. = Dyeing, P. = Printing, Y.P. = Yarn processing.

35. In 1941–2 the finishing section of the cotton industry was heavily concentrated; 25 per cent. of the normal dyeing capacity, 35 per cent. of the bleaching capacity, 50 per cent. of the printing capacity and 33⅓ per cent. of the yarn processing capacity was closed down. At the time of writing this Report deconcentration had not taken place to any substantial extent.

2. DISTRIBUTION

36. Broadly speaking, the link between production and distribution is generally established by the merchant converter, i.e., a merchant who buys cloth from the weaver and has it finished to his instructions by finishers working on commission. The converter does not, as a rule, own looms or finishing plant and, in those cases where he does, cloth of his own manufacture usually represents only a relatively small proportion of the total quantity of grey cloth handled by him. But he has always played a very important role in the industry. The orders placed by him determine what quantity and type of cloth shall be produced. He takes decisions on colours, designs and styles and he is responsible for disposing of the main portion of the industry's output. The industry looks to him to maintain contact with markets at home and abroad, to push the sales of its products in these markets and to bring back knowledge of what the consumer needs.

37. The manner in which the products of the cotton industry are distributed will be discussed more fully later in this Report (Chapter VII). In the present chapter we are concerned only to outline the structure of the converting section.

38. The returns collected by the Cotton Board for the purpose of settling war control policy (export allocations, etc.) have made it possible to compile the following tables :—

TABLE 26

HOME TRADE CONVERTERS OF NON-WOOL PIECE-GOODS

Quantity handled in year ended March 31, 1940	Number of converters	Total trade (million sq. yds.)
Less than 50,000 sq. yds.	83	3
50,000–500,000 sq. yds.	397	91
500,000–5,000,000 sq. yds.	465	760
Over 5,000,000 sq. yds.	65	746
Total	1,010	1,600

It will be seen that 6·5 per cent. of the firms handled 46 per cent. of the total home trade, and that there were 480 firms at the lower end of the scale who between them were responsible for no more than 6 per cent. Many converters also do business in other textiles, and in non-textile goods. The volume of their trade in cotton and rayon goods, therefore, is not necessarily an indication of their total size or importance.

39. The position in the case of exports is summarised in the next table.

TABLE 27

COTTON GOODS AND COTTON RAYON MIXTURES EXPORTING CONVERTERS

Quantity handled in 1940	No. of exporting converters	Total exports (million sq. yds.)
Less than 5,000 sq. yds.	130	0·3
5,000–50,000	306	5
50,000–500,000...	468	100
500,000–5,000,000	257	420
Over 5,000,000	49	525
Total	1,210	1,050

These figures show that, in 1940, 4 per cent. of the firms engaged did half the total export trade, and that 36 per cent. of the firms did only 0·5 per cent. of the trade between them. It should be realised, however, that they relate to periods when war conditions had already caused dislocation of trade. Many markets were inaccessible in 1940. Consequently the structure of the converting section indicated by the above figures does not exactly represent the normal position.

40. Nearly 700 converter firms operated both in home and export markets, and the figures for the total trade have been put together in the following table :—

TABLE 28

HOME AND EXPORT TRADE COMBINED

Firms handling	Number of converters	Total trade (million sq. yds.)
Up to 10,000 sq. yds.	145	1
10,000-100,000 sq. yds.	381	16
100,000–1,000,000 sq. yds.	750	311
Total up to 1,000,000 sq. yds.	1,276	328
1–2 million sq. yds.	190	260
2–4 million sq. yds.	141	430
4–10 million sq. yds.	104	609
Above 10 million sq. yds.	53	1,061
Total handling over 1 million sq. yds.	488	2,360
Grand total all firms	1,764	2,688

From this table it will be seen that 1,276 firms handled only just over 12 per cent. of the total trade, leaving 88 per cent. handled by 488 firms.

41. Table 29 classifies converters according to their main activities.

3. BRITISH OVERSEAS COTTONS LTD.

42. The foregoing paragraphs have described the normal peacetime organisation of the industry. The working of this organisation has of course been severely interfered with in many ways by war conditions. Most of these interferences may, it is to be hoped, pass away, but there has been one interesting war-time development to which we refer in our recommendations in Part II and of which it is appropriate to give a brief account in the present chapter.

43. British Overseas Cottons Ltd. was established in July, 1940, on the initiative of the Cotton Board and with the support of the Board of Trade. The export drive was being intensively pursued at the time. British Overseas Cottons Ltd. was designed to provide a mechanism whereby special arrangements could be made, by co-operation between producers and merchants, for bulk production on special terms in order to attack markets which the normal methods of the trade were unable to secure. B.O.C. arranged for and financed the production of cloth by direct negotiation with spinners and weavers but did not itself sell in the export markets. An assurance was given when the company was first established that it would export only through the normal channels.

TABLE 29

CONVERTERS OF COTTON AND RAYON PIECE GOODS*

Principal or only activity of firm	Total	Cotton Export converters	Rayon Export converters	Cotton Home trade converters	Rayon Home trade converters	Cotton Home or export converters	Rayon Home or export converters	Export Cotton or rayon converters	Home trade Cotton or rayon converters
Cotton export only	577	577	—	—	—	577	—	577	—
mainly	124	124	93	39	8	124	99	124	41
Cotton home trade only	191	—	—	191	—	191	—	—	191
mainly ...	101	77	33	101	37	101	61	90	101
Rayon export only	62	—	62	—	—	—	62	62	—
mainly	12	3	12	—	—	3	12	12	—
Rayon home trade only	54	—	—	—	54	—	54	—	54
mainly ...	42	5	30	22	42	23	42	35	42
Export only (cotton and rayon both important)	21	21	21	—	—	21	21	21	—
mainly	5	5	5	5	1	5	5	5	5
Home trade only (cotton and rayon both important)	58	—	—	58	58	58	58	—	58
mainly	49	27	37	49	49	49	49	49	49
Cotton only (home and export both important)	200	200	—	200	—	200	—	200	200
mainly	119	118	85	119	66	119	117	119	119
Rayon only (home and export both important)	44	—	44	—	44	—	44	44	44
mainly	28	7	27	14	28	16	28	28	28
Cotton and rayon (home and export all important)	54	54	54	54	54	54	54	54	54
Household textiles mainly ...	38	34	4	17	4	35	7	34	20
Total	1,779	1,252	507	869	445	1,576	713	1,454	1,006

* Rayon includes mixtures. Exporters to enemy-occupied Europe only and exporters of household textiles only excluded.

44. The company has operated mainly on loan capital. Its share capital amounts only to £100; its shares, which earn no dividends, are held equally by the Chairman of the Cotton Board and the Chairman of the company. Its board of directors includes a spinner, a manufacturer, a finisher, two export converters and a trade union official..

45. In view of the special circumstances of the time the Board of Trade (acting under powers given by the Defence (Encouragement of Exports) Regulations, 1940) made an agreement with B.O.C. whereby the company was assured of a measure of financial assistance should its efforts to obtain new export markets involve it in loss. For the purpose of providing funds for its assistance the Encouragement of Exports (Cotton) Order, 1940, was made, imposing a levy, payable to the Board of Trade, of 5d. per 100 lbs., on all raw cotton purchased by spinners.

46. The advent of Lease-Lend, the decline in the volume of U.K. cotton goods available for export, and finally the world shortage of cotton goods which followed the entry of Japan into the war, put an end to the war-time export drive and special steps to foster export trade in the manner for which B.O.C. was originally intended were no longer needed. Before this stage was reached, however, B.O.C. was able to give several indications of its usefulness, e.g., in arranging for the production of 10 million yards of cambric for Java in March, 1941. Thereafter the levy on raw cotton led to the accumulation of funds in the hands of the Board of Trade and the levy was terminated in August, 1942. We understand that the accumulated funds amount to rather more than £350,000. A recommendation as to the manner in which this money might be used is contained in Part II of this Report (Recommendation XI).

47. Although the original purposes for which B.O.C. was set up were rendered nugatory by the change in war conditions, the company was none the less able to render very valuable services in the later war years, e.g., by arranging bulk production for re-sale, at cost, in smaller quantities to exporters whose export allocations were small. Its example in this respect was followed by the Grey Cloth Pool, organised by the grey cloth merchants for the same purpose.

48. As an example of the work of B.O.C. we mention that in a recent period the company received orders for its standard poplin shirting from some 80 buyers. The individual orders varied from 250 yards up to about 25,000 yards and amounted in total to nearly half a million yards. By bulking the orders the company was able to concentrate production with three makers, each of whom was assured of continuity of production.

49. The producing sections of the cotton industry are anxious to have in existence a body on the lines of B.O.C. On this subject the Cotton Board's Post-War Committee, on which all sections of the industry, including the merchants, were represented, said :—

> " After particularly thorough enquiry and discussion on the question of British Overseas Cotton Ltd., we reached the conclusion that when the transition phase is over and the industry has to face what will be its permanent post-war future it will be most valuable for the industry to have a company of that general character and purpose available so that its services may be called in as might then be found desirable."

The merchant members of the Committee made the reservation that if such a company is found to be desirable the necessary finances should be provided voluntarily and should not be derived from any compulsory levies or taxes.

SUMMARY

50. The salient features of this brief survey may conveniently be summarised here :—

I. General

The cotton industry is still predominantly horizontal in structure.

Of spindles 81½ per cent. are owned by spinners who have no weaving interests, and of looms 77½ per cent. are owned by weavers who do not spin. Thus only 18½ per cent. of the spinning capacity and 22½ per cent. of the weaving capacity is owned by concerns doing both spinning and weaving.

II. Spinning

(*a*) *Cotton spinning*

(i) *In the cotton spinning industry (omitting waste spinning and doubling) the capacity is mainly held by firms of substantial size, but there is a large number of smaller firms.* (See Table 17.)

Only about 15 per cent. of the spindles are owned by firms with less than 80,000 spindles; but there are 139 of these smaller firms. Of these 78 own more than 40,000 spindles each, averaging about 57,500, while the 61 smallest average about 20,000 each.

(ii) *The large combines own more than one-third of all spindles.*

The total spindleage (February, 1946, about 38½ million M.E. spindles) is divided between three main classes in the following shares: 36·5 per cent. (14 millions) held by large spinning combines and groups and sewing thread firms; 45 per cent. (17·4 millions) held by about 175 smaller firms and groups of spinners who do no weaving; 18·5 per cent. (7·1 millions) held by spinner-weavers.

(iii) *The spinner-weavers are predominantly ring spinners.*

More than two-thirds of the spinner-weavers' spindles are rings. Their share represents 35 per cent. of the industry's total ring spindles and no more than 7½ per cent. of the mule spindles.

(*b*) *Waste spinning.*

The spinning of waste is mainly done by small units.

There were, in 1939, some 130 mills containing nearly 1,000,000 spindles (average about 7,500 spindles). About one-third of the waste spinning capacity belongs to concerns which both spin and weave. Other waste-spinning units belong to firms which also own cotton spinning mills.

III. Doubling

The doubling section is mainly a section of small units.

The doubling section comprises some 232 firms owning about 3·8 million doubling spindles in some 265 mills. Rather more than 100 firms, owning nearly one-third of the spindles, are specialist doublers. Nearly two-thirds of the total capacity is owned by firms who spin as well as double. One very large spinning and doubling combine owns over 600,000 doubling spindles.

The average doubling mill is fairly small, comprising some 14,000 spindles and employing about 130 persons. Many of the doubling mills are situated outside the main Lancashire textile area in proximity to the yarn-using industries such as lace-making.

IV. Weaving

The weaving industry is essentially the field of small units.

There are over 1,000 firms, owning in all about 500,000 looms. The average number employed per firm on the 1939 basis was less than 200. There is a very large number of very small firms. The 400 smallest average less than 100 looms each and 60 per cent. of the firms own less than 20 per cent. of the looms. 124 firms spin and weave and these firms are considerably bigger than the general run, averaging 900 looms each.

Many of the smallest firms operate in " room and power " sheds, which they share with other firms. There were, in 1941, 61 " room and power " sheds containing 69,000 looms.

V. Finishing

The characteristic of the finishing section is that it comprises a large number of small firms and a small number of very large concerns.

In 1939 three-quarters of the firms employed only 36 persons each on the average, the remaining quarter accounted for 77 per cent. of the employment. Six firms between them employed one-third of the total labour force.

Very small units are particularly common in the yarn processing section.

VI. Converting

There is a very large number of converters, but the greater part of these do only a very small part of the business.

The total number of separate converters of cotton and rayon piece-goods is over 1,750, of whom nearly 700 engage both in export and home trade. The total number of firms handling exports is about 1,450 and home trade about 1,000.

Over 90 per cent. of the total trade is done by about 500 firms. This is true of export trade and home trade considered separately and of both combined. Not all of the firms which do little converting are small concerns, for some of them are engaged on a substantial scale in other business.

Chapter V

THE HUMAN FACTOR

1. As we have emphasised in our Introduction, the practical value of any proposals is entirely dependent on the human brains and hands that will be available to carry them out. The subjects covered by this chapter are, therefore, of key importance.

1. MANAGEMENT AND ADMINISTRATION

2. We have not attempted to make anything in the nature of a comprehensive survey of directive and administrative personnel, though we believe that such a survey might produce illuminating data. As regards "expert" personnel, our Research Sub-Committee endeavoured through a widely distributed questionnaire to ascertain exactly how many science graduates are employed by the industry. The results were of a somewhat negative character, though they appear to us to justify the conclusion that the proportion of such graduates is extremely small both absolutely and relatively to the proportion employed in some other industries. We regard this as a matter for serious concern.

In view of what we have said above we attempt no more in this chapter than to call attention to the great importance of these matters, though we put forward some recommendations in Part II.

3. We specially note the impression gained by the Platt Mission and the comparison which they drew between American and British conditions in this matter. The following passages from their Report deserve particular attention.

> "American mill managers, generally, are young and analytical and progressive in their outlook." (Page ix.)
>
> "(*a*) The age of the management personnel (in America) is considerably lower than that in Britain.... It is customary for the manager to have as his assistant a young man who is a specialist, for example, in engineering and who has undergone a degree course training at one of the American universities.
>
> "(*b*) These young men often find their way into such positions by offering their services to mills during college vacations.
>
> "(*c*) The outlook of American management is highly analytical and progressive. No system of organisation, no procedure, is regarded as permanent. It is constantly under review with a view to simplification and improvement." (Page 34.)
>
> "In contrast with American practice the following aspects of British management are noteworthy :—
>
> (*a*) Although British management is, on the whole, more conservative in its outlook and shows more scepticism in the matter of machine improvements and modern methods, it is probably more efficient technically, and certainly pays quite as much attention to the cotton treatment as to the machine.
>
> (*b*) Very few facilities exist for young men pursuing a full-time College training in textiles to spend their vacations in mills, although they are usually very anxious to do so.
>
> (*c*) The continuance of long-established methods and practices in Britain is notorious." (Page 38.)

4. While we by no means advocate anything like a slavish imitation of American methods, and consider that there are many counter-balancing merits in British practice and industrial relations, we think that the comments which we have quoted indicate points which deserve serious attention.

2. THE LABOUR POSITION

5. The main features of the labour position in the spinning and weaving sections of the cotton industry during the inter-war period were:

(*a*) The large proportions of juveniles and females employed;

(*b*) the large number of married women* who remained in employment. Average earnings in the industry were low, largely on account of bad trade, unemployment and under-employment, and in many cases married women had to remain in work to make the family income adequate;

(*c*) The decline in the annual intake of new entrants which fell heavily from 1931 onwards;

(*d*) The heavy rate of unemployment which, in spite of the decline in new entrants, prevailed throughout the industry and was felt most severely in the main cotton towns. Other industries were developing in parts of Lancashire (e.g., the Manchester area), but towns such as Oldham and Blackburn continued to be largely dependent on cotton.

6. Statistics relating to employment in the cotton industry over the last 25 years can be drawn from various sources but must be used with care because statistics drawn from one source are often not directly comparable with those from another. The Census of Production employment figures, the Ministry of Labour returns of insured workers and the current Cotton Control series are all prepared on different bases. The definition of the Cotton Industry used by the Cotton Control corresponds with the scope of the industry as we have regarded it, but we have had to use statistics from other sources to indicate the trend of developments in the earlier years. Tables 30, 31 and 32 below show the trend between the wars and the results of war-time conditions, including concentration. The salient features of Table 30 are:—

(*a*) The numbers employed in spinning and doubling fell from an average of 252,650 in 1924 (19·9 per cent. juveniles) to 186,100 in 1937 (17·2 per cent. juveniles). Since then there has been a further heavy fall. The number of insured workers in July 1945 was 112,200 (10·7 per cent. juveniles).†

(*b*) The numbers employed in cotton weaving fell from an average of 275,100 in 1924 (12·3 per cent. juveniles) to 173,600 in 1937 (11·6 per cent. juveniles). The number of insured workers in July 1945 was 97,000 (9·4 per cent. juveniles).†

(*c*) Before the war females comprised about 60 per cent. of the labour force in cotton spinning and doubling and approached 70 per cent. of the labour force in cotton weaving. These percentages had risen by 1945 to 68 per cent. in spinning and doubling and 71 per cent. in weaving.‡

7. Table 31 shows the decline in the flow of entrants into the industry in the years 1928–1938 and the heavy annual wastage in the total labour force.

---

* In 1937 the proportion of married women among the insured women workers aged 18 and over in the cotton industry was 52 per cent., as compared with 29 per cent. for all industry.

† The figures for 1944–5 in Table 30 are of the number of insured workers in the industry and are not strictly comparable with the figures for the earlier years.

‡ In industry as a whole females represented 28 per cent. of the insured workers in 1939. In 1945 the comparable figure was 42 per cent.

TABLE 30

AVERAGE NUMBERS EMPLOYED IN COTTON SPINNING, DOUBLING AND WEAVING INDUSTRIES*

	Spinning and Doubling									Weaving									Total		
	Males	of whom under 18 No.	%	Females	of whom under 18 No.	%	Total	of whom under 18 No.	%	Males	of whom under 18 No.	%	Females	of whom under 18 No.	%	Total	of whom under 18 No.	%	Total	of whom under 18 No.	%
1912	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	621,516	148,887	24·0
1924	105,592	18,928	17·9	147,063	31,468	21·4	252,655	50,396	19·9	91,495	9,642	10·5	183,627	24,138	13·0	275,122	33,780	12·3	527,777	84,176	15·9
1930	77,509	12,018	15·5	113,227	22,561	19·9	190,736	34,579	18·1	66,351	6,012	9·1	132,302	19,112	14·4	198,653	25,124	12·6	389,389	59,703	15·3
1934	73,254	8,420	11·5	110,496	17,806	16·1	183,750	26,226	14·3	57,762	3,760	6·5	113,590	12,855	11·3	171,352	16,615	9·7	355,102	42,841	12·1
1935	71,510	9,164	12·8	110,905	19,662	17·7	182,415	28,826	15·8	56,828	4,091	7·2	110,076	13,337	12·1	166,904	17,428	10·4	349,319	46,254	13·2
1937	72,246	9,704	13·4	113,862	22,289	19·6	186,108	31,993	17·2	58,138	4,569	7·9	115,457	15,633	13·5	173,595	20,202	11·6	359,703	52,195	14·5
†1944	36,300	4,230	11·7	79,110	10,400	13·1	115,410	14,630	12·7	26,860	2,100	7·3	72,370	7,200	9·9	99,230	9,300	9·2	214,640	23,930	11·1
†1945	35,510	3,470	9·8	76,710	8,560	11·2	112,220	12,030	10·7	27,510	2,050	7·5	69,390	7,080	10·2	96,900	9,130	9·4	209,120	21,160	10·1

Sources: 1924–37, Census of Production and I.D.A.C. Inquiries; 1944–45, Ministry of Labour

* Including administrative staff. † Figures for 1944–5 are of insured workers in the industry

TABLE 31

NEW ENTRANTS INTO INSURANCE: COTTON SPINNING & WEAVING INDUSTRIES

Thousands

Years ended June 30	Insured at beginning of period	New Entrants during period	Calculated net wastage during period
Persons 16–64			
1928–29	553·8	25·5	24·8
1929–30	554·5	23·5	13·9
1930–31	564·1	19·8	34·0
1931–32	549·9	16·1	48·1
1932–33	517·9	14·1	32·2
1933–34	499·8	12·5	44·9
1934–35	467·4	11 9	37·0
1935–36	442·3		
Persons 14–64			
1935–36	469·4	16·1	37·9
1936–37	447·6	13·9	28·9
1937–38	432·6	12·1	30·8
1938–39	413·9		

8. Table 32 indicates the severity of unemployment in the industry—a factor which, itself a consequence of bad trade, discouraged recruiting, and was therefore largely responsible for the decline of new entrants into the industry.

TABLE 32

INSURED OPERATIVES AND UNEMPLOYED: COTTON SPINNING & WEAVING INDUSTRIES

Thousands

	Total Number Insured aged 16–64	Insured Unemployed Aged 16–64 (Average for year)
1924	572·4*	73·5*
1930	564·1	208·2
1937	408·6	47·3
1938	393·0	105·2

* Including persons aged 65 and over

9. Another notable feature over the last 30 years is the rise in the average age of the operatives: *29* in 1911, *31* in 1921, *34* in 1931 and *37* in 1944.

NUMBERS REQUIRED

10. There are at present in the spinning section of the industry about 38½ million (mule equivalent) spindles and rather less than one million spindles for spinning waste cotton. These represent in total approximately the number of spindles operating in 1937. It is estimated that the average number of persons actually working in spinning and doubling in 1937 was 176,000 and that the average number actually working in the weaving section was 187,000. (Estimates published in Board of Trade Journal, September 1, 1945.) We may assume that, if operating methods as well as types and volume of product remained as in 1937, a similar number of workers would be required to operate all the present spinning mills and the balancing amount of doubling and weaving

capacity. Allowing a margin of approximately 7½ per cent to cover normal absenteeism, the total labour force required on this basis would be 390,000–190,000 for spinning and doubling and 200,000 for weaving. The labour force available (i.e. "on the books" of firms) at the end of January 1946 was approximately 226,000 (spinning 92,250, doubling 25,000, weaving 108,750). That is to say, there was a deficit of 164,000, or 42 per cent. (72,750 or 38·3 per cent. in spinning and doubling and 91,250 or 45·6 per cent. in weaving).

Recruitment

11. What are the prospects of reducing this deficit? There are five main sources of labour supply:—

(*a*) Juveniles (mainly school leavers);

(*b*) Former cotton operatives at present employed in other industries;

(*c*) Men and women to be demobilised from the Forces;

(*d*) Adult labour inexperienced in the cotton industry to be displaced from munitions and other industries;

(*e*) Married women displaced by the closing under concentration of the mills in which they worked who are not now in industrial employment and who might return to the industry as the closed mills are reopened.

The position must be reviewed for each of these sources.

Juvenile Entrants

12. School leavers and other juveniles comprised in the past the bulk of new recruits to cotton. In the 1930's insecurity of employment, low earnings and poor promotion prospects heavily discouraged their entry and the industry is still suffering from the memory of those years. Wage rates and earnings are now much better, prospects of stable employment and promotion are good, and working conditions are being steadily improved; but parents with memories of the past have shown reluctance to encourage their children to enter the mills. In recent months there has been some improvement in the rate of inflow. The number of inexperienced juveniles placed in the industry (spinning doubling and weaving), in the North Western Region grew from an average of 180 per four weeks in the earlier months of 1945 to an average of 340 per four weeks in the period mid-July to mid-November. In comparing these figures it must be remembered that the rate of juvenile entry into employment is affected by the ending of school terms, but, even making allowance for this, it is clear there has been a substantial real increase. (The number of placings of inexperienced juveniles in the four weeks ended November 14, 1945, were 427, the highest figure recorded in the year.)

13. But, although there has been this sign of improvement, the rate of new entries is still very low; indeed, the total number of new entrants (juveniles and adults combined) is at present no more than 6,000 a year. As regards the juvenile element, the measure of the present deficiency can be seen from the following figures. On the basis of the 1937 ratio of juveniles to adults (when there were already serious complaints of shortage of juveniles), the insured labour force in July, 1945 (209,120), was short of 11,200 juveniles (8,800 in spinning and doubling, 2,400 in weaving) while, if the total labour force were to be restored to 390,000, no less than 34,600 additional juveniles would be required (20,500 for spinning and 14,100 for weaving) to give the pre-war proportion of juveniles.

TABLE 33

LABOUR SUPPLY: COTTON IN RELATION TO OTHER INDUSTRIES

DISTRICT	SCHOOL-LEAVERS (YEAR ENDED JUNE 30, 1945)									INSURED WORKERS (JULY, 1945)		
	(2)			(3)			(4)			(5)	(6)	(7)
	Number who entered Cotton Spinning or Weaving			Total number of School-leavers			Percentage Column (2) of Column (3)			Cotton (Adults and Juveniles)	All Industries (Adults and Juveniles)	Percentage Column (5) of Column (6)
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total			
Accrington ... ... W	28	66	94	211	206	417	13·3	32·0	22·5	1,630	15,772	10·3
Ashton-under-Lyne ... S	13	29	42	464	414	878	2·8	7·0	4·8	2,404	22,190	10·8
Atherton and Tyldesley ... ... S	39	65	104	244	248	492	16·0	26·2	21·1	2.495	12,424	20·1
Blackburn ... ... W	19	116	135	477	535	1,012	4·0	21·7	13·3	9,196	40,282	22·8
Bolton ... ... S	76	173	249	757	749	1,506	10·0	23·1	16·5	16,649	60,818	27·4
Burnley ... ... W	37	101	138	347	393	740	10·7	25·7	18·6	8,810	33,444	26·3
Bury ... ... W	4	2	6	235	206	441	1·7	1·0	1·4	2,737	18,870	14·5
Darwen ... ... W	3	28	31	138	138	276	2·1	20·3	11·2	2,432	10,193	23·9
Farnworth ... ... S/W	26	45	71	375	387	762	6·9	11·6	9·3	4,267	20,548	20·8
Manchester and Salford... ... S/W	15	46	61	4,257	4,053	8,310	0·3	1·1	0·7	6,595	233,838	2·8
Nelson ... ... W	42	76	118	208	161	369	20·2	41·0	32 0	9 965	15,905	63·3
Oldham, Royton, Shaw Chadderton, Middleton ... ... S	114	284	398	1,029	1,122	2,151	11·1	25·3	18·5	21,490	60,970	35·2
Preston ... ... W	80	201	281	735	753	1,488	10·9	26·7	18·9	6,042	53,433	11·3
Rochdale ... ... S	99	167	266	523	587	1,110	18·9	28·5	24·0	13,003	36,843	35·3
Stockport ... ... S	32	38	70	737	812	1,549	4·3	4·7	4·5	3,917	39,245	10·0
Wigan ... ... S	59	144	203	727	700	1,427	8·1	20·6	14·2	5,127	39,404	13·0
TOTALS ...	686	1,581	2,267	11,464	11,464	22,928	6·0	13·8	9·9	116,759	714,179	16·3

S = More Spinning than Weaving. W = More Weaving than Spinning. S/W = About equal

14. The chances of securing these additional numbers must be considered against a background very different from that which existed before the war. Owing to the fall in the birthrate the number of persons under 18 years of age available for all industry is already only about 80 per cent. of what it was in 1937. When the school-leaving age is raised to 15, during 1947, the total number of juveniles available for work will be only 55 per cent. of the 1937 figure. When the leaving age is raised to 16, the total available will be little more than one-third of the 1937 figure. For a year following each raising of the school-leaving age there will be an almost complete break in the supply of juvenile entrants.

15. While the total number of juveniles available for employment will thus be heavily reduced, there will be a corresponding increase in the competition from all industries to secure them. Even before the war diversification of industry was taking place in districts which had previously been predominantly cotton. During the war many new industries were started in cotton towns and many of these will stay. This industrial development in districts which have been over-dependent upon a single industry (especially one relying on uncertain export markets) is part of the declared policy of the Government. The cutting down of war production will not necessarily release substantial new sources of supply of labour for cotton, since many of the so-called " war " industries are really civil industries which switched over to war purposes only temporarily. The war-expanded industries in Lancashire show every sign of maintaining a labour force above the pre-war level. Moreover, competition must be expected from other Lancashire industries which, like cotton, have been diminished in size during the war and are now struggling to re-establish themselves.

16. For all these reasons the cotton industry has no justification for expecting the present intense competition from other industries for the available supply of juveniles (or other labour) to dwindle to its pre-war level.

17. What are the chances of the cotton industry holding its place among all these competing claimants? The figures given in Table 33, although they relate to a period when the war was still in progress, contain pointers which must not be overlooked. It will be seen that in the areas to which the table relates 16·3 per cent. of the insured workers were registered as being in the cotton industry, but less than 10 per cent. of the school leavers went into the industry. If the Manchester and Salford area (which is not really a cotton area) is excluded, the percentage of all insured workers registered as being in cotton rises to 23 and the percentage of school leavers entering cotton rises to 15. For the areas which are of special importance to spinning the corresponding figures are 24 per cent. and 14·5 per cent. The latter deficiency is particularly important since yarn supplies are the foundation for the whole industry. Some of the spinning centres, including Oldham and Rochdale, are among the areas where, as we are informed, there is likely to be an over-all labour shortage when reconversion and demobilisation are completed.

18. In view of all these factors it seems clear that the industry must face entirely changed conditions in regard to the proportion of juveniles on which it can rely. The rate of intake may rise perhaps to 7,000 a year, but this figure is only 60 per cent. of the pre-war rate, which was itself regarded as inadequate for the industry's needs. We see no prospect of recruitment of juveniles returning to the pre-war level.

19. The position is well summarised in the following extract from a memorandum submitted to us by Mr. E. M. Gray, the Director of the Recruit-

ment and Training Department of the Cotton Board, and Mr. F. McKay, head of the Labour Department of the Cotton Control :—

> "The industry was formerly prodigal in its use of juveniles when in most districts it had practically a monopoly of them. There was blind alley work which better labour organisation could have reduced, and juvenile labour wastage which need never have occurred with sound personnel management and after-care of the juvenile entrants. That monopoly no longer exists. It disappeared with the growth of new industries in Lancashire in the inter-war years. Moreover the total supply of juvenile labour has diminished and will continue to do so. Owing to the effects of the lower birth rate and the operation of the new Education Act the effective juvenile labour force in the country as a whole will be reduced from about 2¾ millions at present to roughly one-half that number 10 years hence. There will be a famine in juveniles, and the cotton industry, now having to compete for them with other industries, will in our opinion have to do three things to meet the situation : (*a*) use fewer juveniles relatively to adults; (*b*) introduce attractive working conditions, employee services and training facilities, etc. ; (*c*) reduce juvenile labour wastage."

Ex-Cotton Operatives in other Industries

20. The next question concerns the return of former cotton operatives from other industries. Since May, 1942, the Ministry of Labour have made great efforts to secure the return of these operatives to cotton, but with only limited success. In 1943 a special registration was carried out of all women aged 18–55 who had had at least six months' experience as cotton operatives since 1935 and who were not, at that time, working in the cotton industry. 95,000 of such women were registered, but the number who returned to the industry between the date of the registration and the end of the Japanese War was very small. About 70 per cent. of the 95,000 were married women with children under 14 or were stated to be medically unfit to return to the cotton industry. Among the balance there was a very marked unwillingness to return to cotton, in many cases because of the better earnings and conditions which prevailed in the war factories. To what extent the ending of munitions work and the improvements of working conditions in the cotton industry will change this attitude cannot be predicted, but the trend during the second half of 1945 was not encouraging. During the second half of 1945 employment on munition work in the metal, engineering and chemical industries fell by 1,800,000—from 3·1 millions to 1·3 millions—over the country as a whole. If the many workers who had been transferred from cotton to these industries during the war had intended to return to cotton in large enough numbers to bring about a big net increase in employment in cotton, much of this net increase would have occurred by the end of 1945. In fact, however, the net increase during the second half of 1945 was only 8,000, of which about 3,000 were accounted for by the return of men and women demobilised from the Forces. As the concurrent increase in unemployment has been small, it is clear that the ex-cotton operatives transferred to munitions work have for the most part either found employment elsewhere (many of them transferring to civilian work for their war-time employers) or have retired from industry. The decline in munitions work in future will be small by comparison with the past nine months and we consider that little further addition to the cotton labour force can be expected from this source.

Release from the Forces

21. We are informed that the number of ex-cotton operatives to be released from the Forces from January, 1946, onwards was about 20,000 men and 2,000 women. A good proportion of these will no doubt return to the cotton industry, but it is unlikely that the figure will be anything like a full 100 per cent.

Inexperienced Adults

22. The cotton industry has not in the past recruited large numbers of inexperienced adults. As already stated, the traditional method of recruit-

ment has been of juveniles. Nevertheless, in view of the changed conditions, the industry has been urged during the last two years to recruit and train men and women, especially those released from the war industries. An adult labour training committee was set up under the Cotton Board, and the Ministry of Labour, in collaboration with this Committee, have introduced a scheme for paying grants and allowances to adult trainees in individual mills. The Ministry of Labour are also preparing a training centre to be established in Oldham. Progress with this project has been very slow, and it is not yet in operation.

23. The number of inexperienced workers, other than juveniles, placed in the cotton industry by the Ministry of Labour in the North West Region rose from an average of little more than 100 per four weeks in the early months of 1945 to about 400 per four weeks in the period July 23–November 14. The average for September 17 to November 14 was 510 per four weeks. This increase is encouraging, but it must be remembered that mid-September to mid-November was a period when munitions work was being very rapidly reduced. It may be that the cotton industry will be able to recruit on an increasing scale from those still to be released from munitions but as we have stated in paragraph 20 above, the greater part of the reduction in the labour force on munitions has already taken place. At the best this would be only a temporary source of supply and recruits of this kind can do no more than help to fill the present gap. They cannot contribute to the solution of the long-term recruitment problem of the industry.

24. The almost total cessation of recruiting for munitions work implies that civilian industries as a whole will be able to secure a much higher proportion of the total of new recruits to industry, and the labour turnover in civilian industries may be reduced. It has been pointed out above, however, in connection with the problem of juvenile labour supply for the cotton industry, that even when the munitions industries are reduced to their normal levels the cotton industry must expect to face much more severe competition from other civil industries than it has done in the past.

RETURN OF MARRIED WOMEN

25. It has been estimated that a few thousand women displaced from cotton mills at the time of concentration retired to their homes. Some of them are returning to cotton as the closed mills re-open. The exact numbers are not known but they are unlikely to be very numerous, nor can the total number to be obtained from this source be very large.

Future Prospects

26. It is clear from the foregoing review that the U.K. cotton industry of the future cannot be based on an abundant supply of relatively lowly paid operatives with a very high proportion of juveniles and married women. It must maintain standards in wages, amenities and other working conditions at least equal to those of other industries which are now established in, or likely to come to, the cotton towns. This fact is recognised and accepted by all responsible employers. Wage *rates* in the cotton industry were 72 per cent. higher in October, 1945, than in August, 1939, and the percentage increase in actual earnings was still greater. The Ministry of Labour's enquiry into earnings for the week ended July 21, 1945, showed that since October, 1938, the increase in *earnings* in cotton was 111 per cent. in the case of men over 21 and 104 per cent. in the case of women over 18. The corresponding increases for all the industries covered by the enquiry were 76 per cent. for men and 94 per cent. for women; but, in making comparisons between the two sets

of figures, it must be remembered that increased earnings in the cotton industry have been partly due to the disappearance of the short-time working which was prevalent before the war. The enquiry showed that earnings in the cotton industry were below the average for men, equal to the average for women, and above it for youths and girls.

27. It is probable that earnings in the cotton industry have further improved relatively to other industries since July, 1945, on account of substantial increases in some of the officially agreed wage rates in the cotton industry since then, and the reduction in the amount of overtime worked in industry generally.

28. Apart from these changes which have been going on all the time while we have been making our investigation, the whole basis of wages in the spinning section has been reviewed by the Evershed Commission. At the time of drafting our report no final recommendation had been published as regards mule-spinning wages and, since the Commission was not concerned with employment beyond the spindle point, its recommendations in any case cover no more than about 40 per cent. of the cotton industry. Nevertheless, some of the principles involved are capable of wide application and one of the points made in our final recommendations is that similar reviews are required for the other sections of the industry.

29. It will be seen from the preceding paragraph that the position is not a static one but it may be summarised as follows. Wage rates are, and are likely to continue, under constant pressure for increase. Working conditions have been improved and can be expected to improve further as the necessary plant and building facilities become available. These developments (which, unless they are balanced by corresponding improvements on the technical side, will have a serious effect on profitability) will at best enable the industry to keep its place as a competitor with other industries in attracting new entrants. It will in fact " have its work cut out " to do this. But that is by no means the whole of the problem. Account must be taken not only of the influences affecting new entries but also of the conditions of the present labour force, which are such that a heavy rate of wastage must be expected.

The Factor of Wastage

30. Wastage is affected at present by the retirement from the industry of persons who remained at work during the war largely from patriotic reasons, and it must be expected to remain heavy on account (*a*) of the abnormally high average age of the present workers, and (*b*) of the retirement from industry of married women who no longer need to work to supplement the earnings of their husbands. We have not been able to get exact figures to show the net rate of wastage but the importance of this factor is indicated by Table 34 which shows on the one hand the rate of growth of the labour force in the spinning, doubling and weaving sections of the industry in recent months, and, on the other, the placing of workers in the industry by the Ministry of Labour. The latter figures include internal transfers of workers from one mill to another and they do not take account of workers who enter the cotton mills otherwise than through the Employment Exchanges. Nevertheless they give an indication of the rate of recruiting to the industry, and the wide discrepancy between the number of placings and the net growth of the total labour force is very striking. It will be observed, for example, that in the case of the spinning section for a period of six months to the end of December, 1945, a total of 11,069 placings had resulted in a net increase of 7,300.

TABLE 34

LABOUR RECRUITMENT AND WASTAGE

No. on Employers' Books				No. placed by Employment Exchanges				
1945 Week ended	No. on Books	Change during Period	Cumulative Change	1945 4 weeks ended	Experienced	Inexperienced	Total during Period	Cumulative Total
A. Spinning (including Waste Spinning)								
June 30	83,039	—	—	July 21	866	325	1,191	1,191
July 28	83,194	155	155	Aug. 18	753	319	1,072	2,263
Sept. 1	84,160	966	1,121	Sept. 29*	1,737*	599*	2,336*	4,599
Sept. 29	85,198	1,038	2,159	Oct. 31†	1,716†	798†	2,514†	7,113
Oct. 27	86,737	1,539	3,698	Nov. 28	1,676	646	2,322	9,435
Dec. 1	89,362	2,625	6,323	Dec. 26	1,089	545	1,634	11,069
Dec. 29	90,339	977	7,300					
B. Doubling								
June 30	25,031	—	—					
July 28	24,766	−265	−265	July 21	69	20	89	89
Sept. 1	24,893	+127	−138	Aug. 18	80	61	141	230
Sept. 29	24,890	− 3	−141	Sept. 29*	167*	102*	269*	499
Oct. 27	24,840	− 50	−191	Oct. 21†	120†	132†	252†	751
Dec. 1	24,910	+ 70	−121	Nov. 28	108	185	293	1,044
Dec. 29	24,999	+ 89	− 32	Dec. 26	82	89	171	1,215
C. Weaving								
June 30	106,770	—	—					
July 28	105,960	−810	−810	July 21	463	202	665	665
Sept. 1	106,250	290	−520	Aug. 18	447	296	743	1,408
Sept. 29	106,780	530	10	Sept. 29*	1,056*	462*	1,518*	2,926
Oct. 27	107,540	760	770	Oct. 31†	994†	434†	1,428†	4,354
Dec. 1	107,820	280	1,050	Nov. 28	634	373	1,007	5,361
Dec. 29	107,840	20	1,070	Dec. 26	447	215	662	6,023

* 6 weeks. † 4½ weeks.

ESTIMATES OF THE FUTURE SIZE OF THE LABOUR FORCE

31. We can turn from these figures to the review of the position in the Report of the Cotton Board's Post-War Committee. Appendix B to that Report contained the following estimate of probable changes in the labour force of the spinning, doubling and weaving sections in the immediate post-war period:

	000's
Already in cotton (males and females)	205
Return from other industries and Forces (females)	40
Return from other industries and Forces (males)	35
	280
Less retirements	10
Total possibly available	270

This estimate was prepared nearly two years before the war ended and on a review of what has happened since then we can only conclude that the forecast of 270,000 is unlikely to be realised.

32. In fact all the evidence which we have received points to the conclusion that it would be most unwise to base an appreciation of future problems and prospects on a forecast of anything more than 250,000 as a maximum total labour force after the country's transition from war to peace has been completed, and that, taking into account the heavy wastage which must be expected over the next few years, it is probable that this total will thereafter decline and over the next few years will stand at an average substantially below this figure—possibly even dropping to 200,000. If, during this period, the industry can be put on to a really healthy footing, enabling it to establish not only high standards of wages, working conditions and amenities, but also confidence in its future, then there is a hope that the flow of young entrants may after a few years be strong enough to outbalance the wastage and turn the tide.

33. We put forward the forecast in the preceding paragraph not as an exact prophecy, but as indicating the conditions for which the industry ought, on the strength of all the available evidence, to be preparing its plans. A labour force of 250,000 represents only 65 per cent. of that required to staff the existing spinning mills (and a corresponding weaving capacity) on a pre-war basis. If that or possibly a substantially lower percentage has to be reckoned on then, for the sake of both volume and economy of production, it is an urgent necessity to consider how the reduced labour force can be utilised in the most effective way. This raises questions of—

(*a*) distribution of labour, e.g., over how many spinning mills should the labour force be distributed;

(*b*) mechanical equipment (the introduction of labour-saving devices);

(*c*) methods of mill-staffing and the utilisation of labour.

(*a*) leads on to matters of policy which are dealt with in our recommendations. Question (*b*) is considered in the next chapter; but we must emphasise in the present chapter that it is on the basis of the foregoing appreciation of the labour position that we approach all the questions of re-equipment. On question (*c*) we can appropriately add some brief observations in the present chapter.

THE BALANCE OF THE LABOUR FORCE

34. One point must be stated very emphatically. The labour supply has been reviewed above in global figures. But it is necessary, both for appreciating the significance of the present position and for considering future action, to take account of the numbers of workers in various different categories. At present there are signs of lack of balance in the labour force; for example, the most acute shortage at present is in the cardroom. It is obviously no use having more persons available to work in the spinning room than are required to deal with the production of the cardroom, or to have a larger labour force in the weaving section than is required to handle the yarn produced by the spinning section (supplemented to some extent by other materials such as continuous filament rayon yarn). These are questions of balance between major portions of the labour force; but there are many cases where very small maladjustments as regards key personnel may have a major effect.*

35. The situation in this respect wants careful watching. Lack of balance may not only prevent the attainment of the maximum production, but actually, even in these times of labour shortage, cause substantial unemployment.

NEW METHODS FOR THE DEPLOYMENT OF LABOUR AND MILL STAFFING

36. Keeping in mind the question of balance above referred to, it is clearly necessary to neglect no possibility for increasing the productivity of the limited labour force, and, as was recommended in the Platt Mission's Report (p. 42)

> " to try out new methods of mill-staffing, measure effects on machine and operative efficiency, and formulate simpler wages rates."

It must be made very clear that such methods can only be contemplated in association with adequate safeguards against overloading the workers, and we wish to say nothing which could be read as implying that the industry should look to methods of this kind as a means of evading its obligation to give its workers the best possible tools in the shape of the most suitable equipment. But, as explained in Chapter VI, re-equipment must take time and, therefore, subject to adequate safeguards, the possibility of improvements along the lines referred to above deserves urgent study. At present it is difficult to give any precise statement of what could be achieved in this way, because so little has been done in the way of carrying out tests of the kind recommended by the Platt Mission.† A number of experiments are being made in individual mills, but we understand that difficulties have been encountered in the series of experiments inaugurated at the Wye Mill under the supervision of the Cotton Board, which has received frequent public mention as a hopeful possibility. We content ourselves with recording this result without expressing any views on the reasons which have led to it, since we have not been able as a Working Party to enquire into the matter fully.

37. Apart from special technical investigations of the kind referred to above, we recognise that, so far as concerns the spinning section, the recommendations of the Evershed Commission will, if adopted, help towards increasing productive output. We understand, however, that the effect of these will not be more than a reduction of about 10 per cent. in total labour requirements in the case of ring mills and 3 per cent. in the case of mule mills.

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* We have been told of a recent case where the production in a particular spinning mill was reduced from 60 per cent. to 30 per cent. of capacity, because four individuals left the mill to take places in a mill re-opened after concentration.

† We refer particularly to their recommendation (4) (page 42) that: " To accomplish the work involved, a small number of selected mills should be made available for investigations and a panel of technical experts should be appointed to conduct them "

38. No enquiry for winding and weaving similar to that made by the Evershed Commission for spinning has been carried out. As was emphasised in the Platt Report the major question in the case of weaving is the extent to which automatic looms can be introduced, but at the same time it is claimed by many Lancashire manufacturers that substantial economies of labour could be achieved, without overloading the operatives, by relatively small modifications of the existing looms (e.g., the introduction of warp stop motions and larger weft packages) leading to the development of " more looms to a weaver " systems. This matter is more fully dealt with in Chapter VI. We are also including in Part II a recommendation for commissions of inquiry on the lines of the Evershed Commission to be set up for the other sections of the industry (Recommendation XIX) as well as a recommendation for an intensive programme of research on all matters affecting industrial employment (Recommendation XX).

CONCLUSIONS

39. In concluding this chapter we must state that we have been in some difficulty about dealing in detail with some of the subjects covered by the last few paragraphs because our terms of reference specially excluded from the scope of our enquiry " matters concerning the relations between employer and employees which are dealt with by the Employers' Federations and Trade Unions ". It will be readily appreciated that it is impossible to consider changes in methods for utilising labour and for the deployment of the labour force without entering the field of matters concerning the relations between employer and employee.

40. So far, however, as these matters affect our own recommendations, we can summarise our views shortly as follows. In considering measures for increasing productive output there is room for much debate and divergency of opinion on the question of the relative importance which should be attached to improved methods for deployment of the labour force on the one hand and improvements in mechanical equipment on the other. Some aspects of this question belong rather to our next chapter. There are, however, two things which can appropriately be said in the present chapter and on which we are all agreed.

(i) The two methods are not mutually exclusive ; they are interdependent and there is a need for both.

But (ii) The existence of possibilities for increasing productive output by improving methods of labour deployment must not be used as a pretext for evading the obligation to instal the best possible mechanical equipment.

41. These two points are a suitable conclusion to the present chapter, the other features of which can be summarised as follows :

(*a*) One feature dominates the whole problem. The cotton industry which in the past relied on an over-abundant, cheap and very skilled labour force, containing a large proportion of women and juveniles (a factor which reduced the average wage per worker) will have to work in future with a smaller, much more highly paid labour force containing a higher proportion of men.

(The labour force employed in cotton spinning and weaving in 1924 was 528,000 of whom 84,000 were juveniles. The insured workers in July, 1945, were 209,000 with 21,000 juveniles.)

(*b*) Looking to the future, so far as we can see the numbers available for the industry are likely to be less (perhaps substantially less) than 65 per cent.

of the number required to operate the existing spinning capacity and corresponding weaving capacity on the 1937 basis. No scope for economy in the use of labour to the extent necessary for bridging this gap appears to exist without a complete revolution in mechanical equipment. The industry must take full account of this factor in planning for the future.

(*c*) In forming an estimate of the future labour supplies account must be taken both of the high rate of wastage to be expected in the next few years and also of the competition for new entrants which will be encountered from other industries. The latter is likely to be felt particularly in the existing spinning centres. To maintain even the reduced numbers indicated under (*a*) the industry must not only pay good wages but continue its efforts to improve working conditions.

(*d*) Not only the size but the composition of the labour force is likely to change, particularly in the proportion of juveniles and married women available.

(i) *Juveniles.*—Within the next two years the total supply of juveniles available for all industries will be reduced by the raising of the school leaving age to 15 and the total number will be little more than half as great as it was in 1937. The cotton industry has hitherto employed large numbers of juveniles; even if it can attract its fair share of juveniles it will have to face a very substantial reduction in the proportion employed and must adjust its methods of labour utilisation accordingly.

(ii) *Married Women.*—The cotton industry (spinning, doubling and weaving) has in the past employed a large proportion of married women. The number of married women prepared to stay in industry in the cotton towns is likely to drop in consequence of the increased opportunities for stable employment for men at adequate rates of pay. In consequence the average working life of women will be shorter. This will be a factor tending to increase the labour turnover and the number of new recruits needed by the industry. The industry must be prepared to develop the use of male labour in place of female, on the lines recommended by the Evershed Commission for the spinning section.

(*e*) In view of the shortage of labour and the need to pay wage rates comparable to those offered by other industries no opportunity must be missed of increasing the productivity of labour both by the introduction of new machinery where this is practicable and also by improving work methods or re-allocating duties among operatives. But increased productivity must not be sought at the expense of overloading the operative.

(*f*) The position will not only be affected by shortage in the total number of workers available. The balance between the various categories is a factor of the greatest importance. It needs careful watching and must be taken account of in any plans for re-equipment and estimates of future possibilities.

(*g*) The position disclosed in this chapter shows that the need to seek every measure to increase productive output per worker has an urgency today comparable to that which existed when the Platt Mission investigated what could be done to increase production during the war.

Chapter VI

EQUIPMENT

1. The last chapter led us to the conclusion that, in view of the labour position, it is urgently necessary to search for methods by which production per man-hour can be increased, so far as this can be done without overloading the workers; and that this points to the need for improvement in mechanical equipment. On this matter the findings of the Platt Mission still hold the field. But the Mission's task was to consider what changes could be made in British methods " to increase production here in war-time," and it was not in their " province . . . to discuss the economic result of these changes and the large capital expenditure involved," though they went on to say that " every member of the Mission is satisfied that the final result would not be unsatisfactory in any phase ".*

2. In other respects, too, the fact that their task was limited to making recommendations for increasing *war* production meant that they were not concerned with many questions which must be taken into account in settling what is the best practical course to take now in times of peace. For this latter purpose, for example, it is necessary to investigate what resources will be available for replacing or improving old plant, to consider how these available resources can be used to the maximum advantage, and to examine all these questions in relation to the type of goods which the industry will need to produce in normal peace conditions and to the supply of labour which is likely to be available.

3. A review of all these matters, which was outside the scope of the Platt Mission, is an essential part of our task. We accordingly turn to such a review in the present chapter which we have arranged in six sections as follows:—

(1) the condition of the existing equipment

(2) the effects of re-equipment on working costs.

(3) the quantity and cost of new machinery which is likely to be available in the next few years for replacing or improving existing equipment.

(4) the factors which have to be taken into account in settling a practical programme to cover the next few years.

(5) the effects of re-equipment on man-power requirements.

(6) the financial position of the industry and its resources for carrying out a programme of the kind indicated in (4).

1. CONDITION OF EXISTING EQUIPMENT

4. One of our main difficulties has been that of getting a detailed and accurate picture for the industry as a whole of the condition of its existing buildings and equipment. General impressions exist; but, when the attempt is made to compile accurate estimates on such questions as what will be the total commitments involved in bringing buildings up to modern standards, re-spacing machinery, improving lighting and amenities, or on the extent to which results can be achieved by improving rather than replacing existing equipment, there is a marked absence of comprehensive records.

* P. 43 Platt Mission Report.

The Platt Mission's Report itself commented on this lack of information, and one of its important recommendations was that there should be instituted without delay " a comprehensive survey of the existing industrial plant and its suitability for modernisation ". Our task would have been greatly facilitated if such a survey had been carried out. This is the subject of one of the recommendations made in Part II.

5. For the present purpose it can be said broadly that, judged by the standards and methods of some other countries, the equipment of the Lancashire industry is (*a*) old fashioned and (*b*) extremely extensive in relation to the turnover handled.

6. As to the first point, it is unnecessary to restate the details given in the Platt Report (see especially pages 23 and 24). The main features are:—

(i) *That for spinning, the Lancashire industry is still equipped predominantly with mule spindles, a type which no other country retains on an appreciable scale and which textile machinery makers in general have ceased normally to manufacture.*

It is unnecessary at this stage to discuss how long and to what extent mule spinning should be retained. This is a debatable issue, and in any case no immediate wholesale conversion is possible. What, however, can be said with certainty is that technical improvements in ring spinning equipment are constantly reducing the field in which the mule is claimed to be superior.*

(ii) *That for weaving, according to the Platt Mission's Report (p. 44), automatic looms in Great Britain cover no more than 5 per cent. of the industry, whilst in the U.S.A. they cover 95 per cent.*

The textile industries of several other countries had in 1939 a substantially greater proportion of automatics than this country. The U.K. system is based essentially " on the allocation of a relatively large part of the work of weaving to the operative and a relatively small part to the machine " (Platt Report, page 28).

(iii) *That a substantial proportion of the machinery now in place is, according to the Platt Report, not only old in type but beyond its efficient working life.*

7. On (iii), no satisfactory figures are available. A partial investigation made in 1930 showed that for most classes of machinery about two-thirds to three-quarters of the plant investigated was then more than 20 years old. Re-equipment since then has not been on a large scale. A survey of buildings was carried out during the war by the Factory and Storage Control and, although it was not fully comprehensive, the results may be taken as giving another broad indication of the position. It was brought out that the percentages of buildings built mainly before 1900 were: in the spinning section, 67 per cent. (representing 61 per cent. of the total floor space), and, in the weaving section, 69 per cent. (representing 69 per cent. of the total floor space).

8. The second characteristic mentioned in paragraph 5 (viz., the large quantity of plant in relation to turnover maintained in the Lancashire industry) is a very striking one if comparison is made with the U.S.A. industry. It is

* Thirty years ago mules were deemed to be essential for spinning yarns finer than 60s; rings are now used to spin yarns finer than 100s.

difficult to get an exact basis of comparison since conditions are in many respects different and allowance ought to be made for such factors as the greater average fineness of counts spun in Lancashire, the working of multiple shifts in the U.S.A., etc., as also for the fact that the greater proportion of the Lancashire spindles are mules. A very rough comparison can be made by taking the relation between total cotton consumed in each country and the number of spindles and looms in place. On this basis (and taking the year 1937 as a year of full activity) comparable figures for spindles in place per bale of cotton consumed were about 13 in the U.K. and 3·1. in the U.S.A. The number of looms per 100 bales of cotton consumed were 15 in the U.K. compared with 6·3 in the U.S.A. The figures for India (and in the case of spindles for Japan) were very close to those of the U.S.A. Similar comparisons with Germany and France indicate that the spindles in place per bale consumed were about two-thirds of the U.K. proportion, but that the looms per 100 bales were almost exactly the same as for the U.K. We must again emphasise that comparisons on the basis used above must not be regarded as in any way exact. Nevertheless the disparities in certain cases (especially in the comparison with the U.S.A.) are so great that they can fairly be regarded as pointing to one very important characteristic of U.K. equipment. This is of course only another aspect of the position brought out in the Platt Mission's Report.

9. The features of the existing equipment which we have thus briefly mentioned have a bearing on our final recommendations and will be referred to again. At the present stage it is sufficient to say that the evidence clearly supports the conclusion that a large measure of re-equipment will be necessary over the next few years. Our real task is to examine the much more difficult questions of (*a*) what programme of re-equipment best combines economic benefit with practical possibility, having regard to all the existing circumstances, and (*b*) what steps are necessary in order to create the conditions for promoting the execution of such a programme. We turn therefore to review the position on various issues affecting the scope for and significance of re-equipment.

2. RE-EQUIPMENT AND WORKING COSTS

Methods of Enquiry

10. We have endeavoured to examine as fully as possible within a limited time the question of re-equipment in relation to working costs. For this purpose we appointed a Sub-Committee to :—

> " investigate costs and costing methods with a view, in particular, to ascertaining, from the experience of cost investigations during the war or otherwise—
>
> (*a*) what savings in costs can be achieved by the industry, as now equipped, through the introduction of longer runs ;
>
> (*b*) how costs of production would be affected by the installation of new machinery efficiently used and
>
> (*c*) whether standard costing methods can be evolved with special reference
> (i) to providing an index of the efficiency of individual firms ;
> (ii) to providing a basis for prices."

We have in the Foreword expressed our acknowledgments to the members of the Sub-Committee. What we have to say in the following paragraphs is based largely on their findings ; but, for the form and statement of the conclusions, the responsibility is ours.

There are some outstanding points of general significance which emerge from this enquiry and which should be mentioned at the outset.

LACK OF COMPREHENSIVE COST RECORDS

11. The first is the lack of comprehensive and reliable data as to costs. The material actually available is patchy and sketchy. The absence of uniformity in cost-accounting systems renders it impossible to make entirely reliable comparisons between the commercial results of different methods of operation. Although some firms are now well equipped for studying their costs and although a great deal of information has been collected by war-time investigations for the purpose of settling controlled prices, it is, nevertheless, broadly true to say that the industry as a whole lacks adequate knowledge of its costs structure, and that this lack has, in the past, been a serious handicap in devising sound production and selling policies, especially in such matters as settling what variations in prices should be made for different lengths of run, etc. There is very great need for improvements under this heading, and no time should be lost in introducing them. In particular it is important that the material collected by war-time investigations should not be merely filed and forgotten. If properly studied, it ought not only to provide valuable information on the actual costs of various processes and systems of operation, but also give guidance as to methods for investigating costs, measuring efficiency, and regulating prices. The working of the Costs Sub-Committee has shown the value of discussion and exchange of ideas between men of expert knowledge and practical experience in cost-accounting, and we consider that arrangements should be made for the continuance of this type of discussion.

12. In support of the general conclusions stated above we may quote an extract from the Costs Sub-Committee's Report dealing with question (*c*) in our terms of reference to them. The Committee reported as follows :—

> " As regards (*c*) in our terms of reference we are unanimous and emphatic. Even in the course of our short and specialised task we have badly felt the need of uniformity in the keeping of cost records. It is highly desirable that in each section of the industry costs should be computed in a uniform manner. We believe that much argument and time are needlessly spent upon opposing differences of meaning which are interpreted as differences of opinion.
>
> " Many firms may find it difficult to operate efficiently a costing system sufficiently comprehensive to serve the needs of the larger firms but there need be no difficulty in modifying the system to meet the simpler requirements of the smaller firms without losing the advantages of uniformity of method and meaning.
>
> " We regard the keeping of expense and production records in a uniform manner as important in itself. If a firm is to achieve the maximum efficiency there must be a way of measuring the efficiency achieved, of detecting and correcting wastage and wasteful methods promptly, and isolating and measuring the effects of modification in technique or policy. An essential part of this work is the regular keeping of proper cost records.
>
> " If in addition all firms in the same section do the work in the same way, and use the same terms with the same meaning, there is a ready means available at any time for pooling information for the benefit of all, without any need for disclosure of business secrets to business rivals.
>
> " In this connection we would call attention to the excellent work done in regard to uniform costing methods for the weaving section by a Committee set up by the Cotton Spinners' and Manufacturers' Association. We believe the precedent set by that Committee of pooling the experience of competent cost accountants, some drawn from the trade and some from outside the trade, is a valuable one ".

SPECIAL CONDITIONS NOW AFFECTING RE-EQUIPMENT

13. The next broad impression that we must mention has an important bearing on practical policy. In considering questions of re-equipment today it must be appreciated that conditions are abnormal owing to the precipitous rise in prices (or fall in the purchasing power of money) resulting from the war and its reactions. In a later paragraph we show that present quotations for

textile machinery show increases up to 100 per cent. over the pre-war level When a firm has machinery which is in no sense worn out (in fact which can do its work just as well as, or perhaps, with adaptations already made, even better than, when it was new) and which stands in the books at values based on pre-war prices, and when the question arises of replacing this with modern machinery which has to be bought at post-war prices, then the commercial advantages of re-equipment must obviously be very much less than would have been the case if the inflationary war rise in prices had not taken place. The influence of this condition, which of course affects every industry which has not been re-equipped with the latest type of modern machinery during the war, is of exceptional strength in the case of the cotton textile industry. There are various reasons for this. A very great proportion of the equipment of the cotton textile industry is not merely pre-1939 but pre-1914, so that not only have two steep war rises occurred since its book value was recorded, but the original cost must have been in many cases entirely written off. If, therefore, a mill equipped, say, in 1906 can operate effectively with practically no capital charges to be included in its costs, then, so long as an adequate labour supply is available, it would be necessary to show extremely high operating economies to make it seem a paying proposition to instal new plant at present prices, especially if substantial building alterations are involved. Indeed, from the mere profit-earning standpoint it might well *pay* an individual owner best to take advantage of present easy markets, work his machinery till it is worn out, and then go out of business.

14. But whilst such a course may appear for the moment to pay, the effects on the national interests, on the operatives' interests, and on the long-term interests of the whole industry are very different matters. It is hardly necessary to emphasise how disastrous it would be to the operatives' interests if there were to be a large-scale move by owners to work their machinery to a standstill and then go out of business. But it is necessary to call attention to some of the broader considerations. With the present shortage of manpower, the nation requires the most economical use of human labour and the maximum production per man-hour, while account must also be taken of what the position of the textile industry would be in the future if every mill were to defer re-equipment until its present machinery is literally worn out. Even from the point of view of the individual mill owner, to operate with plant which has been written down to nothing and to make no provision from current returns for building up a fund to replace his machinery, may lead to serious trouble if he intends to continue in business. Such a man is in a sense deceiving himself by benefiting from an inherited position instead of carrying capital charges which should be regarded as part of the normal current costs of production. Sooner or later, if he continues in business, he will require to instal new plant and then he will have a rude shock, since he will find (*a*) that his whole cost basis in the past has been unreal, and (*b*) that, if he has not accumulated a replacement fund adequate to cover replacement at current costs, he will have to raise new capital without correspondingly increasing his earning power. It is not difficult to see how disastrous might be the awakening if the whole of the industry were left to continue on this basis.

15. On the other hand it is necessary to recognise how the conditions just described affect the whole controversy about re-equipment and what a real difficulty they create in deciding what is the right course now in each case. That difficulty is increased by the fact that, according to the present Income Tax law, the mill operating with old written-down plant can take the commercially sound course of including in its costs provision for building up a fund to buy new machinery at current replacement cost only if it is prepared to

pay tax on the amount by which such provision exceeds its normal allowances for wear and tear.

16. Moreover, while we feel no doubt about the conclusion that, from the national standpoint, a serious crisis would arise in the future, if the cotton industry as a whole were to continue operating all its old plant until actually worn out, and were to make no preparation now for introducing new methods or for building up funds for re-equipment, there is another aspect of the national position which must be taken into account in settling the time and pace at which the transformation of equipment should be carried out. The present national need for consumer goods is very great. The question as to what proportion of current resources in manpower and materials ought to be allocated to creating capital goods is one which ought to be settled according to the national interest, as also is the order of priority for different kinds of capital goods. It is quite possible that on a review of the national position as a whole, it may be right to leave the cotton industry for the present to make the maximum use of the machinery which is actually available, and to concentrate the national re-equipment effort first on other industries. We do not feel qualified to give precise answers on such broad questions of national policy, but what we do say, without any shadow of doubt, is that it will be disastrous if the industry deceives itself into thinking that to operate old plant with no provision for its replacement gives a true picture of current costs, or that it is sufficient to face the future on that basis without starting now to make provision for substantial re-equipment.

Wages, Man-Power and Re-equipment

17. Two further points should be added. The first is that the relative advantage of new labour-saving machinery steadily increases as the standard of wages goes up. At present the wage position in the textile industry is on a changing basis. In the spinning section the recommendations of the Evershed Commission await implementation, and the position as regards wage scales in other sections may well be affected by what is done for spinning. We have not been able to get any precise estimate of what the Evershed recommendations will mean in terms of production costs, though it was stated to the Costs Sub-Committee by one spinning mill that an increase of about 10 per cent. on its wages bill would be involved—a percentage which, for various reasons, the Costs Sub-Committee thought might prove lower than what will be involved for the industry as a whole. Apart from changes in the wage structure which may result from an implementation of the Evershed Commission's recommendations we must record the fact that during the course of our own enquiry some important increases in official wage rates in various sections have been agreed.

A second and, in its immediate practical results, a more important point is that shortage of manpower provides a compelling reason for installing plant capable of giving a higher P.M.H. It is indeed clear that, unless the present position of labour shortage is entirely changed, speedy re-equipment will become a very urgent necessity. Otherwise the result will be either that the home market will be starved or that the Lancashire industry will miss the present favourable opportunity for getting a footing again in export markets.

Costs Sub-Committee Inquiry

18. It has been necessary to review the position in this general manner before turning to the actual findings of the Costs Sub-Committee. The Sub-Committee concentrated mainly on the second of the questions mentioned in

paragraph 10, viz.: "How costs of production would be affected by the installation of new machinery efficiently used." In order to deal with this question they examined the position for some typical cloths—a drill, a lining, a coloured-woven poplin, a cambric, a hair cord and a sheeting. They then worked out the spinning and weaving costs for each of these cloths on five different bases, as shown below:—

Spinning*	Weaving†	Shifts
1. Low draft Mule spinning	Lancashire looms 4 to each operative	Single shift 48 hours
2. High draft Ring spinning	Lancashire looms 8 to each operative	Single shift 48 hours
3. High draft Ring spinning	Lancashire looms 8 to each operative	Two shifts of 40 hours each
4. High draft Ring spinning	Automatic looms	Single shift 48 hours
5. High draft Ring spinning	Automatic looms	Two shifts of 40 hours each

* Low draft spinning was assumed throughout in the case of the poplin.
† The "8-loom" calculation was not made in the case of the sheeting.

19. We mention these particulars in order to show how complex a task it is to examine this matter on a realistic basis, going beyond the stage of mere generalisations. Although we were anxious to go beyond this stage, we must make it clear, as emphasised by the Sub-Committee themselves, that the inquiries which they were able to make in the time available were not adequate or conclusive. Data confined to only six types of cloth afford too narrow a foundation, while the five possible combinations of various methods represent no more than illustrative sample cases. In practice there may well be no manufacturing units whose conditions exactly correspond to those assumed in these cases. "Re-equipment" is, moreover, a very elastic term, and there is a wide range of intermediate steps possible between a "low draft mule-spinning mill" and a "high draft ring-spinning mill"—expressions which themselves are capable of differing interpretations.* Moreover, on

* By low draft spinning the Sub-Committee meant the normal present sequence of processes:—

Opening, scutching, carding, drawing (3 heads), slubbing, intermediate, roving, spinning

there being three lines of rollers at each stage from slubbing onwards, the draft in spinning not normally exceeding eight for single roving. For the high draft costs it was assumed that spinning would be done on ring frames with either four lines of rollers or with apron systems (the difference in cost is very small) and that this would enable the roving stage to be dispensed with.

In dealing with weaving the problem was more complicated. Both for 8-loom and automatic weaving the process was to take each cloth separately, to go through a complete list of the jobs in a mill and to say for each how many looms one operative on that job could serve, having regard to the nature of the cloth. The wage rate assumed for each job was one which is actually being paid at the moment. The main difference for automatic looms as compared with 4 Lancashire looms was taken to be a reduction in the number of weavers partly offset with battery fillers. The main difference for 8 looms as compared with 4 looms was taken as being to halve the number of weavers and to offset this partly by weft and cloth carriers and cleaners who relieve the weaver of those tasks. It was assumed that on the 8-loom system the looms would continue to run at the same speed as under the 4-loom system.

a number of fundamental factors, some of which are mentioned below, the Sub-Committee had to work on assumptions.

20. For these reasons they represented to us that the figures contained in their report might create misleading impressions and that their publication would be inadvisable. We should have accepted this view had it not been that some of our members wished to use the figures as a basis for certain arguments contained in their dissenting memorandum. The Sub-Committee's report is therefore printed as Appendix II*; but we hope that all who read it will give due weight to the reservations made above.

ASSUMPTIONS MADE IN THE COSTS SUB-COMMITTEE'S REPORT

21. The following notes deal with some of the more important of the assumptions on which the Sub-Committee worked.

(*a*) *Wages.*—The Sub-Committee's calculations were based on actual costs shown confidentially by individual concerns to their Chairman, and therefore the wage factor was based on the actual rate paid when the costs were recorded. This may be substantially too low. There have in fact been increases in the official rates since then, and, as already noted, if the recommendations of the Evershed Committee are implemented, that will mean a further increase, probably amounting on the average to over 10 per cent. in wages for the spinning section.

Further—a most important point—the Sub-Committee reckoned in all cases that working double-shift would mean a 40-hour week and that piece-rates of pay would be so adjusted that the same wages would be earned as for a 48-hour week on a single shift basis (i.e., that the hourly earnings would be increased by 20 per cent.).

(*b*) *Machinery Utilisation.*—The Sub-Committee assumed that spinning machinery would be used to 85 per cent. of capacity and weaving machinery 80 per cent.† In our view these rates are too low. Costly new machinery cannot yield its proper value on such a basis and a higher utilisation rate should be possible. If a higher rate had been assumed the advantage of new equipment would have appeared much greater.

(*c*) *Method of arranging Labour Force and Work per Operative.*—This is a most important factor.

In the case of spinning, the Sub-Committee allowed for the cutting out of the roving process by the installation of high drafting. This involves a much smaller reduction in operative hours than what was shown in the Platt Report to be attained in the U.S.A.

In the case of weaving, the number of looms assumed to be worked per weaver varied from 12 to 20 according to the cloth. These rates are very far below the practice in the U.S.A. and other countries. This is a matter on which Lancashire has no established standards, since the use of automatic looms has been so exceptional. If it becomes an accepted practice, the numbers of looms per operative should greatly exceed those assumed in the calculations.

(*d*) While the above mentioned considerations indicate that the Sub-Committee's figures cannot be taken as exact or as indicating the full potential savings, there is another factor in their method of calculation which may be regarded as having a contrary effect.

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* Page 251.

† It is necessary to emphasise that this is not the same as loom efficiency.

In order to have a strictly comparable basis for measuring commercial results as between different types of machinery they have included in capital charges provision for interest and depreciation for both old and new types of machinery on the same basis, i.e., allowing for replacement costs at present values. This can be said to give a true commercial comparison but it does not of course show the position as it actually presents itself to a mill operating with old plant written down in its books to a low figure (see paragraph 13 above).

22. For all these reasons the Costs Sub-Committee's figures must be regarded as notional calculations rather than as accurate statements of savings applicable to particular cases. On the other hand they have considerable interest and value as showing the relative importance of certain factors and of certain changes in methods.

23. We have prepared a number of tables analysing the figures in different ways so as to bring out the significance of each item of costs in connection with different cloths and different methods of working; but, in order not to burden the text with a mass of figures, we have included these as Annexe 2 to Appendix II*, and shall refer here only to some of the main points which they bring out.

24. As a prelude, it will be convenient to explain certain expressions which we shall use.†

"Total cost" includes cost of raw cotton, capital charges and operating costs.

"Conversion cost" includes operating costs and capital charges.

"Operating cost" covers all costs other than cost of raw cotton and capital charges.

"Capital charges" include interest on value of capital assets and provision for depreciation. The Sub-Committee have allowed in their calculations for interest at 5 per cent. and a depreciation provision sufficient to write off plant in 20 years for single-shift working and in 15 years for double-shift working.

25. Subject to the foregoing explanations we set out in the next paragraphs some of the principal points which emerge from the Costs Sub-Committee's Report.

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* Page 261.

† It is important to emphasise that the decisive item for the purpose of our present review is the "conversion cost." If the "total cost" (i.e., the cost including raw cotton) is taken as the basis for calculating percentage savings, that may show very misleading comparative results, since the proportion of the total cost represented by the raw cotton content varies substantially according to the cloth. In the cloths taken by the Sub-Committee the raw cotton content represented the following percentage in the total cost (according to present methods). Drill 53 per cent.; Lining 34½ per cent.; Poplin shirting 19½ per cent.; Cambric 45 per cent.; Hair cord 40 per cent.; Sheeting 44 per cent. It is of course true that the use of high speed machinery may involve some changes in the type of cotton used, but in the Sub-Committee's calculations the cost of raw cotton for each cloth has remained an almost completely stable factor in all five alternative methods (see the analysis in Appendix II).

MAIN POINTS EMERGING FROM THE COSTS SUB-COMMITTEE'S REPORT

26. The main result may be shortly stated as follows:. Taking the rates of wages assumed by the Sub-Committee, it would be possible, with high draft ring spinning, automatic looms, and double day shifts to pay a 48-hour wage for a 40-hour week (i.e., to increase the hourly earnings by 20 per cent.) and show the following results in conversion costs :—

Cloth	Per cent. saving	
	Spinning	Weaving
Drill	5·7	6·2
Lining	11·8	7·6
Poplin Shirting ...	—*	7·8
Cambric	9·4	8·4
Haircord	11·2	—†
Sheeting	10·7	7·3

* The poplin shirting is not included in the spinning results because the Sub-Committees' calculations assumed low draft spinning at all stages.

† The 8 looms system showed the best results for the haircord. The cost is, on the Sub-Committee's calculations, actually higher with automatic looms than with low draft spinning and four looms.

These may not appear to be startling figures when shown as percentages in this way; but they may well be of decisive importance to commercial survival. The calculation in the footnote shows how very important, in terms of profit, a 10 per cent. saving in costs of conversion can be.* Moreover, it must be remembered that, as already pointed out, the calculations have been made on very conservative assumptions and above all that they allow for an increase in the hourly earnings of 20 per cent.

The last-mentioned point indicates the key feature, viz., that the higher the wage rates, the greater the advantages of re-equipment. The calculations in the Annexes to Appendix II give some figures further illustrating this point.

27. The following may also be noted as important points :—

(i) The figures of percentage savings given in paragraph 26 represent the difference between the two extreme cases, i.e., low draft-4 looms-single-shift, as contrasted with high draft-automatics-double-shift.

* The following is given merely as a figurative illustration.

Suppose a spinning mill were engaged solely on the warp yarn for cambric in the Sub-Committee's list of selected cloths. This is a ring spun yarn. Assuming a mill of 60,000 ring spindles with low draft running at 90 per cent. capacity 48 hours a week, the annual production of yarn would be about 4·32 million lbs. The cost of raw cotton per lb. of this yarn is 13·80d. The amount required to cover conversion costs (including capital charges) as calculated by the Costs Sub-Committee is 7·00d. per lb. That is, the total required selling price is 20·80d. per lb. A re-equipped mill with high-draft, working two 40-hour shifts, would produce 66⅔ per cent. more yarn per annum than the mill on a 48-hour week, i.e., it would produce 7·2 million lbs. a year, and if it can effect a saving of 10 per cent. in conversion costs, which is about the average shown for spinning, if will, if selling at the same price, earn an extra £21,000 (0·70d. × 7·2 millions) in the year.

This is clearly a very substantial sum considered in terms of additional profit on a 60,000 spindle mill. It must further be remembered that the calulation of the Sub-Committee allowed not only for a 5 per cent. return on the full capital cost but also for a 20 per cent. increase in hourly earnings of the operatives and for writing off the plant in 15 years.

The latter is not in all cases the method which shows the greatest saving out of the four stages of re-equipment examined. On this point the tables in the Appendix should be studied. The spinning figures show the same trend for each cloth. In weaving there is more variation according to type of cloth.

(ii) In the case of " operating costs," the change to automatic looms shows by far the largest and most consistent advantage of any change in equipment, averaging about 20 per cent. of the operating cost and going up to 25 per cent.—even with the very moderate number of looms per weaver allowed for in the calculations.

(iii) The cost relation between automatic looms and 8 Lancashire looms depends on the nature of the cloth. Generally, the automatic loom shows to best advantage on low pick, coarse weft cloths. The saving on both automatic and 8-loom weaving tends to be greatest where the construction of the cloth demands a high piece-rate under the uniform list.

(iv) With full re-equipment (i.e., high draft ring spinning and automatic looms) the difference between one-shift and two-shift working is of decisive importance. In the case of all the cloths examined the reduction in capital charges per yard of cloth which results from adopting a two-shift 40-hour week instead of a single-shift 48-hour week is substantially greater than the total saving effected by changing from old to new equipment.

(v) If the costs of new types of machinery come down, the commercial results of re-equipment will greatly improve. Some figures illustrating the effect of this are given in Annexe 1 to Appendix II.

28. Before turning from these figures to other matters, we must once more call attention to the explanation given in paragraph 21 (*d*) and to the point made there and in paragraph 13 about the position of companies which have old plant written down to a low figure. We do not wish to claim too much for the calculations. What they do is (*a*) to show clearly the sort of commercial results to be expected from modern equipment, and (*b*) to make clear that it will pay to instal equipment of the modern type instead of the old type. What they do not do is to provide an answer to the question raised in paragraph 16, viz.: Having regard to the national interest, *at what rate* should new machinery be installed, or in other words, for how long will it be best for the nation that the industry should go on working out its old plant in order to provide immediate supplies of consumer goods? The answer to that question must, as has already been stated, largely depend on national policy. Some light will be thrown on its practical aspects in the following sections, but one thing is clear and that is that the main force exerting pressure for speedy re-equipment in the national interest is the shortage of labour.

29. *Long Runs.*—Another vitally important condition for getting full value out of modern equipment is adequate length of run. As to the effect of long runs on costs, our Sub-Committee found themselves forced to report that the information at present available did not justify them in giving exact answers. They called attention to the fact that when price control for weaving was introduced certain estimates were made of the average output per loom according to pre-war practice, and that profit enquiries made later showed that these estimates had been greatly exceeded. Beyond this we may add that there seems to be general agreement that the war-time experience of working on a smaller number of cloths has clearly demonstrated the economic value of organising production in this way.

30. *Methods of Measuring Efficiency.*—It is, of course, obvious that merely to install new machinery does not automatically ensure certain standard results. Not only is technical efficiency something different from total efficiency, but there are wide variations in every type of efficiency as between one firm and another. These variations, of course, affect working costs, and one of the most difficult questions in any general review of an industry, especially in connection with any policy of price control is, " What is a fair assessment of costs on the basis of a reasonable standard of efficiency ? " One conclusion which emerges clearly from our enquiries is that there is not enough information on this subject to give a reliable answer. As appears from the last paragraph it has been necessary for the purpose of war-time price control to work mainly by making rough shots at costs and later to check these by reference to actual results for a number of companies. In war-time, volume of production mattered more than efficiency; but, during the next years of transition to normal peace conditions, quite different considerations will apply. If there is to be any form of price regulation, and if at the same time the industry is to be spurred on to attain the maximum possible efficiency and economy in production, then it is vitally important to have reliable methods for checking what costs ought to be with efficient methods of operation.

31. *Range of Variations in Efficiency.*—In order to throw light on this matter we felt that it would be valuable to ascertain what could be learned from war-time cost investigations about the variations in efficiency as between different firms. The Costs Sub-Committee have reported that the information available indicates that there are wide variations, but that very thorough investigation is necessary before reliable conclusions can be drawn from the figures. In fact in connection with this question, as with several others to which we have referred, there is need for a much more comprehensive collection and analysis of information.

32. We had hoped to be able to get some further information bearing upon variations in efficiency from the results of the costing investigation in weaving conducted by the Costings Branch of the Ministry of Supply. Time, however, did not permit our Costs Sub-Committee to arrive at factual conclusions from these.

33. It is clear from what has been written above that the study of costs in order to establish what are reasonable standards of efficiency, is a matter of practical importance which requires urgent attention.

The general conclusions to be drawn on the various matters covered by this section are summarised at the end of this Chapter.

3. SUPPLY AND COST OF NEW MACHINERY

34. *Present Uncertainties and Labour Shortage.*—It is extremely difficult to estimate exactly how the position as regards textile machinery supply is likely to work out over the next five years. The whole of the industry is still in the throes of conversion from war to peace production and is hampered by a shortage of labour and particularly of technical personnel. A special shortage exists as regards foundry workers, and the supply of castings represents a serious bottleneck. We are informed that the question of foundry labour has been under discussion with Government Departments; but we must emphasise that it is a matter on which action is urgently required. Another factor affecting the whole industry is the uncertainty about costs and therefore about the prices which can be quoted. Obviously the textile industry is seriously handicapped for planning an orderly programme of re-equipment

in these conditions. Subject to the foregoing general remarks we set out below certain particulars as regards the main types of machinery which are based on the findings of our Machinery Sub-Committee. We have, in the Foreword, expressed our appreciation of the work done by this Sub-Committee, on which several outside members served. A table summarising the position is included in Appendix III*.

A. The Supply Position

35. *Spinning Machinery.*—The production of spinning machinery is almost entirely in the hands of a combine, Textile Machinery Makers Ltd. Their present capacity is stated to be 1,200,000 ring spindles per annum (including associated preparatory machinery). According to their evidence they have a project for a new works which it was hoped would be available by March, 1946, and which when fully in operation would increase their output by 60 per cent. Their output could further be increased by devoting to new machinery the capacity now in use for spares and accessories.

According to their evidence the annual output value of spinning machinery from their present factories, when fully reconverted for the manufacture of textile machinery and manned on a double-shift basis, is estimated at £15 to £16 millions—a figure which will increase to £25 millions when the projected new factories are in operation. The reconversion, however, of the existing factories is far from complete and a labour force sufficient for double shift working is not in sight.

It was stated in evidence that only a very small proportion of their output of new spinning machinery had before the war been taken by the British cotton textile industry—in fact that 95 per cent. went to export markets. As it was difficult to reconcile this figure with those recorded in the 1935 Census of Production we asked for further details. The fuller information given in the footnote† shows that, taking new plant and spare parts combined,

* Page 266

† The figures for home sales set out below include woollen and worsted spinning machinery. Owing to the dislocation caused by the war, etc., it has been impossible, without causing the company an undue burden, to extract the figures for cotton textile machinery separately.

SALES OF NEW SPINNING MACHINERY

	Home		Export	
	£000	Per cent.	£000	Per cent
Platt Bros. & Co., Ltd.—				
Year ended March 31, 1930	151	10·7	1,258	89·3
18 months ended September 30, 1931	95	9·2	942	90·8
Six Amalgamated Companies—				
Year ended September 30, 1932	121	10·7	1,012	89·3
September 30, 1935	267*	18·5	1,177	81·5
September 30, 1936	158*	14·7	920	85·3

* Including £157,000 in 1935, and £30,000 in 1936, for doubling machinery supplied to a firm which does not spin yarn for weaving or knitting.

SALES OF SPARE PARTS

	Home		Export	
	£000	Per cent.	£000	Per cent.
Six Amalgamated Companies—				
1935	224	44·9	275	55·1
1936	278	50·4	274	49·6

the home demand in 1935 and 1936 accounted for about 25 and 27 per cent. of the total production; but a substantial part of this percentage represents demands from consumers other than the cotton spinning industry. It is not therefore possible to get an accurate idea of the latter's demand. The past history is not now of great significance, and we have only dealt with this matter at any length because we wish to urge that accurate records should be kept in the future not only for the purpose of having knowledge on matters which are of considerable national significance, but also in order to avoid the misunderstandings and criticism to which generalised statements often give rise.

36. Of the orders for new cotton spinning machinery now outstanding, we are informed that about 90 per cent. are for export. This percentage covers all machinery, including preparatory machinery, and we understand that the percentage of new spinning frames covered by home orders is substantially higher than this; but we have not been able to obtain exact information. The conclusion seems to be that if preference is given to orders for home use and if the production plans of Textile Machinery Makers Ltd. are realised, their capacity, when their new works are in operation, should be sufficient to supply the home industry as far as it is likely to be able to absorb new equipment. On the other hand it seems clear that the production plans indicated above are in fact very far from realisation. If, therefore, it is considered necessary, as a matter of national policy, that export demands should be fully met, there appears likely to be great delay in carrying out a substantial measure of re-equipment in Lancashire. We consider that this is a matter which urgently demands investigation, and we have included a recommendation about it in Part II.

37. *Winding and Beaming Machinery.*—There are five independent British firms making winding and beaming machinery. Most of it goes to the doubling section. The makers state that their existing capacity is considered adequate for any likely demand from the spinning and weaving sections. Normally of warp (cone) winding machinery 45 per cent. is exported and of weft winding machinery 27 per cent. In the case of winding machinery, however, the question of imports is one which needs serious consideration. Some of the most efficient machines, for example, the Schweiter, have for years been imported. Importations ceased during the war; but 12-month bulk licences have now been granted for the importation of each of the principal types on a moderate scale. It seems necessary that the importation of winding machines should be encouraged. The British textile industry needs the best winding machinery and, according to the Platt Mission's Report, it is in this section of production that the greatest possibilities for increasing P.M.H. are available. We understand that machinery from Switzerland and the U.S.A. would be available at a fairly early date in larger quantities if import permits could be granted.* For the winding and beaming of warp yarn there are two main types of American machinery—Barber and Colman, and Abbott. Arrangements are being made for the manufacture of Abbott machinery in this country The Abbott pirner for weft is expected to be made here, while the Hacoba winding machinery is already in production.

Foreign drawing-in and knotting machines will also be required and bobbin-stripping machines for use with automatic looms.

* It is to be noted that British manufacturers of winding machinery ask for the retention of the present import duties of 20 to 25 per cent. except for machines which cannot be made here or when British manufacturers cannot cope with the demand. The manufacturers of no other class of textile machinery put forward any demand for import duties.

38. *Weaving Machinery.*—Evidence from the "Lancashire loom" makers indicates that they will be in a position to supply all the looms of this type that are likely to be required. As regards automatic looms, however, the British capacity for production is a matter which gives us serious concern. The following is an extract from the Report of our Machinery Sub-Committee on this matter:—

> "We believe that, whilst there is a large field in which Lancashire looms can still produce more economically, automatic looms should be installed at a much greater rate than in the past for those types of cloth for which they are suitable. The Northrop Co. are far the largest producers in this country. As a result of extensions at present in hand they expect to be able to produce 6,000 looms a year by the first half of 1948. On the basis of their present order book, 2,000 of these will go for export and 1,000 for fibres other than cotton and rayon, (principally woollen). This only leaves 3,000 looms a year for Lancashire. This figure is totally inadequate."

We accept the views of the Machinery Sub-Committee as to the need for a great increase in the British production of automatic looms. The question of the total quantity and of the type of automatic loom to be produced are matters for further examination. We refer to this again in a later paragraph.

39. *Finishing Machinery.*—There are six independent British firms making finishing machinery. It is difficult to assess the position as regards supply in relation to demand owing to the very wide variety in the machines produced. Before the war a substantial proportion of the new equipment purchased by British finishing companies was imported from continental countries, notably Germany. We have been unable to form any reliable judgment as to what the position will be in the near future as regards imports from the Continent; but we can only assume that it is unlikely that much will be available from these sources for a long time. This appears to be a matter which requires further investigation.

B. Present Prices of New Machinery

40. *Prices of British Machinery.*—We have compiled a table summarising the information which we have received as to the present prices for various types of British machinery. This is included in Appendix III. It will be seen from this that for high draft ring spinning equipment present prices are said by Textile Machinery Makers Ltd. to be 65 per cent. on an average above those of August, 1939, and that for other types increases of from 50 to 100 per cent. are shown. We cannot regard these figures as giving any more than a very rough indication of the position. Textile Machinery Makers Ltd., for example are, we understand, refusing to quote firm prices for any deliveries more than six months ahead.

Further, in making comparisons between present and pre-war prices we feel it necessary to point out that the prices of spinning machinery had risen very sharply after the formation of the textile machinery merger in the early 1930's. We have, for example, received evidence to the effect that cards could be bought in 1933 for £100, but that to-day, with practically no alteration in design, the price is £363. It may be that, as stated to us by the representatives of Textile Machinery Makers Ltd., they were losing money in 1933 and that they may then have been selling machinery at uneconomic prices; but an increase, such as that referred to above, seems to require further explanation. Certainly, if the comparison is taken back to 1930, it appears to us that in general the prices of spinning machinery have shown increases much greater than those shown by other types of machinery during the same period.

41. *Quality of British Machinery.*—We quote the following extract from the Report of our Machinery Sub-Committee.

> "We believe that the pre-war quality of British spinning machinery compared favourably with that produced by other countries. The Lancashire looms made in this country were also probably the best of their type and in both these classes of machinery there was a large export trade. In other types of machinery the position is not so good. The most efficient winding machinery was imported from America and Switzerland. So were drawing-in and knotting machines and the best types of speciality looms for high class work. The Northrop looms made in this country were, so far as we know, as good as any looms of their class, but the Crompton and Knowles loom, which has the reputation of being better made, is only produced in America. It is only fair to state that its cost is two or three times as much as the Northrop. We understand that strong efforts are being made by some of the British winding machinery makers to make winding machinery as efficient as that of their foreign competitors.
>
> "As for finishing machinery, it seems that the machinery made in this country for finishing cotton is as good as any in the world but that the best machinery for rayon came from continental countries which had superimposed rayon industries upon old established silk industries."

While the foregoing statement may correctly describe the position as it has existed hitherto, we feel bound to record the impression that, in the last 10 years, textile machinery makers in other countries, especially the U.S.A., have been spending money on research and development on a scale immensely greater than anything attempted in this country. We feel considerable concern on this matter and are including in our recommendations proposals for immediate enquiries into the position.

C. Relations Between Makers and Users

42. One of the questions which we put to the Machinery Sub-Committee was "Is there a sufficiently close co-ordination between textile machinists and the users of machinery?"

The answer given by the Sub-Committee was as follows:—

> "The textile machinists, with the exception of the makers of finishing machinery, all said that there was excellent co-ordination between makers and users. *We do not agree.* In our opinion there is room for much closer collaboration between makers, users and Shirley Institute. Casual visits to mills by salesmen and foremen are not enough. There should be organised co-operation in design and more large-scale trial of new developments in mills."

We accept the findings of the Sub-Committee as set out above. They do not apply with equal force to all classes of machinery makers and in some cases the relations are not unsatisfactory; but, broadly speaking, one of the chief impressions which we have gained from our investigation is the need for bringing about a much closer form of collaboration between the British textile machinery industry and the British users of their products. We regard the juxtaposition of these two great industries as a condition which ought to give a special opportunity to both. This opportunity has certainly not hitherto been used to full advantage.

43. We must refer particularly to the relations between Textile Machinery Makers Ltd. and the textile industry. The former is a merger formed in 1931 to unite all the important British makers of spinning machinery. We believe it is correct to say that the merger now occupies as near an approach to complete monopoly as exists in any important British industry. Rightly or wrongly (and we are concerned with the fact rather than with the underlying reasons for it) a lack of mutual confidence exists between the two sides, together with a feeling on the part of the textile industry that they are at the mercy of the combine and a suspicion that the prices charged to them are

unduly high. As we have not, as a Working Party, been able to enquire fully into the matter we must make it quite clear that we do not wish to express any view as to whether the suspicions mentioned above are justified. We are convinced, however, that the feeling which exists is an element which definitely increases the doubts felt by the spinning section of the industry about embarking on a large scale programme of re-equipment. Our Machinery Sub-Committee has recommended to us that there should be an independent investigation into the position. This is a recommendation which, in Part II of this Report, we endorse.

44. There are several other matters, other than those already mentioned, on which the evidence which we have received causes us concern. As, however, we have not been able ourselves to make thorough investigations into the textile machinery industry and are recommending an independent enquiry, we refrain from further statements in this Report.

4. FACTORS IN A PRACTICAL RE-EQUIPMENT PROGRAMME

45. Taking into account our appreciation of the various aspects of re-equipment as set out in sections 1, 2 and 3 of this Chapter, together with the facts about the labour position in Chapter V, we have now to consider how a practical programme for re-equipment might best be worked out over the next few years. It is not necessary for us to set out a programme in precise detail, even if that were possible. All that we desire to do is to indicate the broad features which will be involved, in so far as these affect our immediate recommendations on the organisation of the industry, financial provisions, etc.

Nature of the Market Demand

46. There are a number of uncertain factors which must affect the precise nature of a programme for re-equipment. The exact type of equipment which will be required will vary according to the qualities of yarn and cloth which have to be produced, and these of course depend on the markets which will be available. In all that we have to say in this Section we are proceeding on the assumption that the tendencies which were showing themselves before the war will continue. These were, briefly, a move towards coarser counts in the spinning section, increased use of artificial fibres, and an increasing proportion of higher grade European styles as exports of traditional native styles declined. There has also been an increasing demand for cotton yarn for the hosiery trade and, as we have shown in Chapter II, the weight of yarn used for purposes other than weaving cotton piece goods can be expected to be about 30 per cent. of the total yarn production.

47. Apart from these clearly marked tendencies, there are special features of which account must be taken. The results of the war may be such as to create new opportunities or the need to take special steps for replacing former markets which have been lost. For example, large quantities of fine yarns were exported from the Bolton district, before the war, to Germany for the production of fabric gloves. In cases of this kind there is a definite need for a careful survey of the position so that the necessary information may be available and that no opportunity may be lost. There are obviously possibilities that manufacturers in this country may be able to step in to the place occupied by German industries for handling products like British yarn.

Lack of Accurate Information as to Existing Equipment

48. As already pointed out in paragraph 4 the working out of a detailed programme for the re-equipment of the industry as a whole is hampered by

the lack of accurate information on the present state of buildings and machinery in the cotton textile industry. We have had to refer in several places in this Report to the recommendations of the Platt Mission (p. 42, Recommendation 3 (*a*), (*b*), (*c*)), that immediate surveys should be made of the existing position. Without such surveys no comprehensive picture of the industry as it exists to-day is possible and no balanced plan for modernisation can be produced. We refer to this matter again in our final recommendations.

THE SCOPE OF A RE-EQUIPMENT PROGRAMME

49. There has, as is well known, been a great deal of controversy about re-equipment. The conclusion reached by our Machinery Sub-Committee—with which we are in general agreement—is that extreme and sweeping generalisations, as to the need for wholesale scrapping on the one hand or the possibility of meeting requirements by adaptations of existing machinery on the other, are of little practical value in deciding the steps to be taken in the next few years. New machinery is obviously necessary in all cases where results are required which cannot be produced by any adaptations of existing machinery (e.g., automatic looms, coning and pirning machinery, etc.). In other cases something short of complete replacement of old machinery may be sufficient, e.g., high draft equipment might be installed on existing speed frames and ring frames, lifts can be increased (within limits) as also can the size of rings if the gauge permits. Our broad conclusion is that a very large measure of re-equipment is necessary and that advances must be made along both lines. There is room for re-equipment with new machinery and modernisation of old to proceed at the same time according to particular circumstances. We recognise that these circumstances must be weighed up in each particular case by the man on the spot who knows what he has to produce, and the machinery he has already got. At the same time it is necessary to keep in view the position of the industry as a whole. What can be achieved during the next few years depends on the resources for textile machinery production that will be available. These resources must be used so as to secure the maximum total progress. Progress may be patchy and uneconomic unless there is a broad survey of the position for the industry as a whole.

In the following paragraphs, based mainly on the Report of our Machinery Sub-Committee, we call attention to the major factors which must be taken into account in a general plan for re-equipment.

Major Factors in a Re-equipment Plan

EFFECTS OF THE LABOUR POSITION

50. Whatever view may be taken about the possible size of the future market outlets, it is clear from the review in Chapter V that the available labour force will be inadequate to operate the existing plant (in all the three sections) according to present methods of operation. It follows that, if it is desired to get the maximum production from this inadequate labour force, new labour-saving machinery must be introduced. The need will be for fewer and better mills, weaving sheds, etc., and less extensive and more productive machinery. The full implications of this are described in our final conclusions and recommendations in Part II.

EFFECTS OF TWO-SHIFT WORKING

51. As shown in Section 2 of this chapter, the introduction of costly new machinery may involve capital charges which cannot be carried economically if the machinery is to be worked on a one-shift basis. This matter is fully

dealt with in Part II. In this chapter it suffices to state very shortly the main practical effects as represented to us by our Machinery Sub-Committee. They summarise the position as follows :—

" If double day shifts permitting machinery to run about 80 hours a week instead of 48 are to become the rule, only 60 per cent. of the equipment that would otherwise be required would be needed. This is an important issue which should be faced now and should be allowed for in any schemes to deal with redundancy or re-equipment. If it is not, much effort and money will be wasted in providing re-equipment in mills which will not be required after the shift system has been adopted. In view of the very high cost of modern machinery and of the slow rate at which it is being produced it would be most unfortunate if any of it were wasted."

SUPPLY OF WEFT TO MANUFACTURERS

52. Our Machinery Sub-Committee reports as follows :—

" It has been represented to us very strongly that the present system of spinning weft of different sizes to fit individual manufacturers' shuttles is most uneconomical for the spinners. We have considered this point carefully because it would involve a fundamental change and are of opinion, in view of the reduced cost of rewinding on the latest machinery, that the present system is not the best for most of our trade. The alternative, which we recommend, is for the spinner to deliver the yarn on cones and the manufacturer to pirn it to his own particular size. Yarn is already delivered on cones for use in the hosiery trade. If this practice were adopted spinners could standardise their sizes of package to a much greater degree than at present to the maximum size that their spindles will allow."

AUTOMATIC LOOMS AND " MORE-LOOMS " WORKING

53. On these vexed questions we record the conclusions reached by our Machinery Sub-Committee :—

" In the weaving section our present equipment is certainly not the best from the labour force point of view. The adoption of automatic looms means a saving in labour of about one-third*, allowing for the extra ancillary labour that they need . . . .

" There is no doubt that a number of types of cloth, chiefly those with the coarsest wefts, but including some finer goods containing colour where the Uniform List for ordinary weaving is high, can be produced most cheaply, and with the least expenditure of labour, on automatic looms. Where these conditions operate automatics should be installed as quickly as they can be made. Owing, however, to limitations in the possible rate of supply of automatics, there can be no question of the immediate transformation of the whole weaving industry. Moreover, there is in present conditions a substantial range of cloths for which the use of automatic looms may show no marked advantage over Lancashire looms or even show, in present conditions, a less favourable result. Over a large part of this field the Lancashire loom can be made more economical in labour than it is at present by an extension of the ' More looms' system.

" ' More looms ' working has been one of the most controversial issues in the manufacturing section for the last 15 years, and no subject generates heat more quickly. We submit, however, that the time has come to put all prejudices about it on one side and to consider it objectively. The first hurdle to be got over is the idea that any fixed number of looms, or any other machines, is the ' right ' number for an operative to look after. The decisive factor ought to be the work load and this depends not so much on the number of machines as on the nature of the material that is passing through them. If this material is of poor quality it will keep breaking down and the operative may be overworked with only one loom. If, on the other hand, the material is good and the shuttling, which is a weaver's main work, is reduced by means of longer lengths being provided on the pirns, there may be no more work on 8 looms than on 4, or even on a higher number than 8 if the conditions are correspondingly improved. It is all a question of the work load and that can be measured more accurately than by just counting looms.

* In view of the limited experience in the use of automatic looms in Lancashire, the Sub-Committee were careful to be conservative in their estimate of possible labour savings. The examples given in the Platt Report, which are reproduced in section 5 below, indicated that savings of well over 50 per cent. are obtained in the United States.

"The second hurdle is the idea that the conditions laid down for more looms working may be violated by unscrupulous employers and that exploitation of the workers may ensue in consequence."

The Sub-Committee pointed out that one method of guarding against the risk is to tighten up the existing system of inspection. This is an important matter. Protection against possible abuse of this kind goes to the root of industrial relations and involves many matters which we cannot fully discuss in this Report and which are indeed outside our terms of reference. Methods of inspection may be of some assistance, but the main safeguard must depend on raising the standards of all employers to the level of the best, and on creating a genuine spirit of co-operation between employers and operatives.

The Sub-Committee's Report continued as follows :—

"The Industry cannot afford to turn down the cheapest method of producing a large proportion of its products provided that the system does not put a work load on the operative which is higher than it should be. There is, moreover, an urgent need to achieve the best that is practicable in existing circumstances. Even if a complete transformation to 'automatics' were the right course, there must be a long period during which, owing to shortage of facilities for making new machinery, such transformations could not be carried out. During that period it is an urgent national necessity that the maximum production should be got out of the existing machinery.

"A suggested way in which work loads can be assessed and fairly remunerated has been laid down in detail in the Report of the special Sub-Committee of the Cotton Spinners' and Manufacturers' Association which dealt with weavers' wages. When this Report was produced an investigation of a large number of mills, made by Shirley Institute, found that the average weaver had 30 per cent. of her time for rest, relaxation and supervision. The suggestions made in the Report did not contemplate that this allowance should be reduced, however many looms a weaver had in her complement. The fact is that the idea that any particular number of looms is a correct one for a weaver to look after does not take into account variations and conditions which may have a very considerable effect in increasing or decreasing the weaver's work."

MILL CONDITIONS

54. The effect of the alterations required by the last Factory Act and by the various Committees which are now sitting will be to involve expenditure on a serious scale, and this must not be overlooked in making any assessment of the cost of re-equipment. It cannot be accurately gauged until the reports are available. The cost of the *re-spacing* proposals may be particularly heavy involving not only the throwing out of a large number of looms (perhaps 25 per cent. of those now in place) but also structural alterations to existing buildings as well as the erection of new buildings.

Other major items which have to be taken into account are :—

Renewal of flooring.
Air conditioning.
Dust extraction appliances.
Lighting improvements.

Beyond these needs there will be many other items for expenditure on matters such as the provision of lockers and overalls, painting of walls, etc., first-aid and rest-rooms, improved lavatory accommodation, etc. Whilst much has been done recently by some firms under all these heads, there is a very great deal of work still to be done in order to bring the whole industry up to modern standards of amenities.

55. We have had evidence as to the cost in particular cases of the various items listed above ; but we refrain from giving specific figures, since the costs are likely to vary considerably from mill to mill. We fully support the policy

of improving conditions in mills and hope that the recommendations of the various Committees will be put into effect as soon as possible. It is necessary, however, to emphasise two points : (i) that the carrying out of these improvements will involve expenditure on a very substantial scale, and (ii) that it will in many cases necessitate considerable re-arrangement of the layout of machinery. If re-spacing involves drastic alterations there will, of course, also be a reduction in the number of machines per building. That reinforces the need for increasing productive capacity per machine.

ELECTRIC DRIVING

56. The Machinery Sub-Committee report that the desirability of electric driving appears to be generally conceded, but, for individual concerns which possess steam engines still capable of good work, the decision to scrap them is a serious one, taking into account capital outlay on new plant, depreciation and power-supply costs. It is true that the relative advantages of electric driving over steam are greater to-day than they have been in the past owing to the much increased price of coal, and it is generally agreed : (*a*) that, should a steam engine need replacement it would be best to change to electricity, (*b*) that in the case of a new mill individual electric drives should be installed.

As a compromise, particularly for existing mills, the possibility of group-driving from a line shaft powered by electricity instead of steam has been suggested but, although it would cost considerably less per machine than individual drive, it loses some of the advantage.

The cost of installing generating plant is very high—£40,000-£50,000 for a 50,000 spindle mill. Pending the development of possible revolutionary changes in the systems of power generation, we think that industry could be helped in a very effective manner if power could be supplied at cheaper rates than at present through the grid. Firms would thus be induced to change over more quickly to electric driving with all its advantages, which include, from the public point of view, a substantial saving in coal and a cleaner atmosphere.

It has been suggested that in the finishing section, owing to the much greater amount of process steam used in some finishing processes, a better case can be made out for firms generating their own electricity than in the other sections.

CONCLUSIONS BY MACHINERY SUB-COMMITTEE

57. Taking into account all the matters referred to in the preceding paragraphs our Machinery Sub-Committee reached the general conclusions that plans for the future should include : (*a*) some form of redundancy scheme which in its preparation should take into consideration the possible development of two-shift working in spinning and weaving and its effect on the quantity of plant required, and (*b*) measures to encourage re-equipment on lines which will in the actual circumstances produce the greatest attainable economies in working costs and the demands on labour.

The Sub-Committee further indicated the main headings for re-equipment plans in each section. These we record below, but in doing so we avoid elaboration of detail since the ground has been fully examined in the Platt Mission's Report and many points are now generally accepted.

In the spinning section

(i) More high drafting in cardrooms and spinning rooms.

(ii) Larger packages.

(iii) More standardisation of package sizes.

(iv) High speed winding and beaming where long runs make it suitable.

(v) Coning machinery so that yarn spun on large packages for use as weft can be sent to the manufacturer on cones, as now obtains in the hosiery section.

In the weaving section

(vi) Pirning machinery for rewinding weft delivered by the spinners on cones.

(vii) Automatic looms for all cloths which can be produced most efficiently on such looms. (As an alternative converted looms may be the best practicable step in certain cases.)

(viii) Modernisation of Lancashire looms for cloths which can be produced most efficiently on the " more looms " system.

(ix) Provision for the production or import of foreign type looms for some types of high class rayon fabrics.

For both sections (in all mills where these matters have not already been dealt with)

(x) Improved lighting installations.

(xi) Modern air-conditioning plants.

(xii) Interior decoration (painting instead of whitewashing, etc.).

(xiii) First-aid and rest-rooms, modern lavatory accommodation, etc.

(xiv) Electric driving (in many cases).

58. The view of the Machinery Sub-Committee was that these improvements, including re-spacing, can be carried out in the majority of existing mills. From the point of view, however, of achieving the best layout and conditions, the Sub-Committee considered that new mills would be desirable and they expressed the hope that some would be built. They recognised, however, that limitations on building resources, combined with the present high cost of building, would prohibit any action of this kind on a large scale in the immediate future.

59. In order to complete the record of the Machinery Sub-Committee's findings we mention two other points :—

(*a*) *Location of New Mills.*—If any new mills can be erected the Sub-Committee suggested that it will be of value to try new areas. There is no inducement to erect new mills in districts already suffering from a chronic shortage of labour. There is also no logical reason for attempting to confine the industry—if, as we hope, it has a prosperous future before it—to particular areas, if it can be carried on efficiently in others within easy distance. A new mill, even on a small scale, put up in a part of Lancashire where labour is more plentiful would give a useful guide as to whether the labour available in such places would be efficient, given of course proper training schemes.

(*b*) *Manufacture of Accessory Machinery.*—Another question to be considered is whether the output of textile machinery can be assisted by employing firms outside the existing textile machinery makers. The Sub-Committee, though they were not able to examine the matter fully, expressed the view that certain accessories, or standard parts, might be produced independently for later central assembly. They pointed out, however, that this presupposes a greater degree

of standardisation in textile machinery than now exists, and would in particular involve the production of jigs and patterns. They further suggested that the production of loom attachments or of other accessory machinery might best be undertaken by " outside " firms. Further investigation into these possibilities is desirable.

60. The broad conclusions which we draw from the findings of the Machinery Sub-Committee, as recorded above, are summarised at the end of this chapter, and are taken account of in our final recommendations in Part II.

5. RE-EQUIPMENT AND LABOUR REQUIREMENTS

61. This chapter would be incomplete without some examination of the effects of re-equipment on labour requirements. There is room for divergence of views as to the commercial advantages of installing modern machinery, and, as has been explained in paragraph 13, the choice for an individual company, which has serviceable plant written down to very little in its books and which is confronted with the very high post-war costs of new machinery, may often be a difficult one. But there can be no doubt that the present position as regards labour supply is such that, if the cotton industry is to supply the home market and have a substantial balance for export, every possible step must be taken to increase the productive output per worker. We concluded Chapter V with the words that this need " has an urgency to-day comparable to that which existed when the Platt Mission investigated what could be done to increase production during war."

62. When we turn to consider how re-equipment will affect the numbers required for a given output we enter a highly technical and controversial field. We do not propose to examine each process in detail, but merely to call attention to the scale of importance of the matter and to suggest points which demand priority of attention. We also wish before leaving the subject to remind readers of the findings of the Platt Report, as indicating not necessarily what is immediately practicable but the *scale* of the potential savings in labour requirements which different equipment and methods have shown to be possible in the U.S.A. These findings have been discussed mainly in terms of production per man-hour ; but for our present purpose it is more instructive to present them in terms of numbers required for a given output.

63. A broad impression of the significance of the Platt Mission's findings, interpreted in this way, can be given by taking the British output of 1937 and the labour force then employed and examining how that labour force could have been reduced by using American methods. If it is assumed that the particular examples taken by the Platt Mission are representative for the whole group of coarse, medium and fine yarns and cloth, it can be estimated that on the labour force employed in 1937 the saving in numbers required, if U.S.A. methods had been employed, would have been as follows :—

Spinning and Doubling	38 per cent.
Winding and Beaming	80 per cent.
Weaving	62 per cent.

For the total labour force the saving would have been about 52½ per cent. Roughly, therefore, the labour requirements would have been halved. That, however, is allowing for a 48-hour week. If there is a reduction in this country to a 40-hour week, the saving would be 40 per cent.

64. As a supplement to the broad impressions given above, we have extracted certain illustrative samples from the Platt Report and these are given in Appendix IV*. The main points may here be summarised :—

	U.S.A.	Pre-War British
Illustration 1—*Spinning Mill* (9's twist)		
Men	164	244
Women	62	107
Total ...	226	351
Illustration 2—*Spinning Mill* (31's twist and 43's weft)		
Men	70	104
Women	33	69
Total ...	103	173
Illustration 3—*Winding and Beaming* (12's)	23	124
Illustration 4—*Winding and Beaming* (30's)	10	53
Illustration 5—*Weaving* (Coarse cloth)	858	2002
Illustration 6—*Weaving* (Medium cloth)	307	930

65. It must be recognised that the figures of British labour requirements used in the two preceding paragraphs are based on pre-war practice when labour was plentiful. Since then, more economical methods of labour utilisation have been introduced into many mills. Further, we must make it clear that we do not suggest that savings in labour requirements of the magnitude shown by American practice are possible in British conditions. It will, in any case, require many years before the industry can be fully re-equipped and there are many special features about the task to be performed by the British industry which would make complete reproduction of American methods undesirable even if it were possible. Nevertheless the figures should be kept in view as indicating a goal towards which the British industry must move if it is to satisfy home demand and maintain an important export trade with a labour force of about 250,000 in the spinning and weaving sections.

66. In addition to the tables referred to above, we have included in Appendix V† an analysis prepared by the Shirley Institute which compares, in the case of two cloths, the operating hours required according to British and American methods. The main results may be summarised as follows. The two cloths taken were a coarse and a medium cloth. The labour consumed has been expressed in the form of " operative hours " per 100 lb. of loom-state cloth. For the coarse cloth the results are 25·75 operative hours under the British method and 11·55 under the American method. The American method thus shows a saving of 14·20 operative hours (55 per cent.), which is made up of 2·01 hours (32 per cent.) in spinning, 3·63 hours (81 per cent.) in winding and beaming, and 8·56 hours (57 per cent.) in weaving. For the medium cloth the total operative hours are 60·17 under the British method and 22·90 under the American method, showing therefore a saving of 37·27 hours (62 per cent.)

* Page 268
† Page 270

for the American method. Of this total 9·04 hours (47 per cent.) are accounted for on spinning, 6·11 hours (81 per cent.) on winding and beaming, and 22·12 hours (66 per cent.) on weaving.

67. Our chief object in putting forward the Shirley analysis and calling attention again to the Platt Mission figures has been to suggest that this type of analysis is valuable as indicating the points which deserve priority of attention and to emphasise that on all these matters much more intensive study is required. It is in our view regrettable that there has been so much controversy on whether British is " inefficient." However " efficient " it may be, the present need is so urgent that the industry cannot afford to disregard any lesson to be learned from the practice of other countries.

68. We must add one concluding observation. We recognise that there are differences and disagreements on many issues involved in the subject discussed in this section ; but the possible measure of difference or disagreement is not material for our Report, since it does not affect our practical recommendations. We are in fact all agreed that whatever may be the full limit of change which may ultimately prove practicable and desirable, it is necessary forthwith to prepare for measures of re-equipment to an extent which will (*a*) more than absorb the supplies of machinery which can be expected over the next few years unless steps are taken to supplement the existing sources of supply, and (*b*) involve a series of major consequences in the organisation and shape of the industry. It is on these broad conclusions that our recommendations in Part II are based.

6. FINANCIAL RESOURCES FOR RE-EQUIPMENT

69. We have endeavoured to ascertain how far the industry as a whole has been able to strengthen its financial resources during the war and thus to form a judgment as to the amount of new finance which will be necessary to provide funds for a substantial programme of modernisation and re-equipment. We have collected a good deal of information on the position of individual companies, but this has not been comprehensive enough to justify us in giving precise figures. It is enough for our present purposes to state the following broad conclusions in general terms.

70. In the absence of an up-to-date survey of the conditions of existing buildings and equipment (*vide* paragraph 4) it is impossible to make a close estimate of what the total capital requirements will be. There is in particular uncertainty about the expenditure required on the purposes mentioned in paragraphs 57 and 58.

71. There has, since 1939, been a definite increase in the financial strength of the industry as a whole ; but, owing to the operation of E.P.T. on a low standard, and to the inadequacy of depreciation allowances for accumulating replacement funds commensurate with current replacement costs, the industry has not been able to build up sufficient resources to finance a full re-equipment programme.

72. In order to carry out re-equipment on the scale which we consider necessary without leaving the industry handicapped by unduly heavy capital charges, there will be a need for facilities :—

(*a*) for ploughing back profits into re-equipment expenditure ;

(*b*) for raising money at the lowest possible rates of interest.

If the industry's operations in the next few years are consolidated on a rational basis so as to make the best use of the limited labour force, then, in view of the prevailing shortage of all consumer goods, there ought to be an opportunity to make substantial profits. Provided that adequate facilities are available under headings (*a*) and (*b*) above, and that they are rightly used, then the re-equipment of the cotton industry should not prove an unduly formidable task. The extent of the task and the methods which we propose for dealing with it are further dealt with in our Recommendations in Part II.

CONCLUSIONS

73. (*a*) *The Labour Position.*—This is the dominating factor affecting the reasons for, and advantages of, re-equipment. The main points are :—

(i) That the prospective shortage of labour makes it imperative to provide labour-saving equipment and to increase production per man-hour if the cotton industry is to be maintained as a major industry.

(ii) The increase in wage per worker (due both to rises in the rate of wages and to the diminution of the proportion of juveniles and women) reinforces both the need stated under (i) and also the economic advantages of re-equipment. The better the machinery available, the higher will be the earning power of human hands. The higher the wage levels, the greater will be the commercial advantage of labour-saving machinery.

(iii) While there is considerable scope for increasing productivity per worker by improved methods of labour utilisation, measures of this kind will be neither right nor acceptable to the workers if they are used as a substitute for installing the best possible equipment (see also Chapter V). In fact the installation of the best possible equipment for each class of work is a necessary condition for whole-hearted co-operation in developing the best methods of labour utilisation.

(*b*) *The Commercial Significance of Re-equipment.*—The following are the main points :—

(i) The extent of the commercial benefit of re-equipment depends on the level of wages and the way in which the machinery is used. As to the latter, for full benefit there must be continuity of production, utilisation as near the 100 per cent. rate as possible, and utilisation for as many hours per week as possible.

(ii) Re-equipment on the right lines and properly used will pay the industry, the labour force and the nation. It is clear that the greater part of the present equipment should be replaced by equipment of modern type.

(iii) In the immediate future, however, it may pay individual concerns to work out existing plant which has been well written down ; but this should be recognised as a temporary transitional phase and provision should be made from current earnings for future replacement.

(iv) Following on (iii), considerations of national interest also affect the situation. The regulation of the pace at which re-equipment is to proceed involves questions of the balance which should be maintained as between the production of capital goods and of consumer

goods and questions of the order of priority for the former as between one industry and another. This is a matter on which decisions by the Government will be required.

(*c*) *Re-equipment Plans and Machinery Supply.*

(i) Whatever differences of interpretation may be given to the considerations mentioned in (*b*) (iii) and (iv), it is clear that early re-equipment is required on a scale which will more than absorb the new machinery likely to be available over the next few years unless special steps are taken to increase supplies, and involve a series of major consequences in the organisation and shape of the industry.

(ii) It is therefore desirable that capacity for textile machinery production should be increased at certain points and that during the period of shortage the available supplies should be allocated in such a way as to realise the maximum advantage.

(iii) In the case of spinning machinery potential production might be adequate to meet requirements but failing further extensions of capacity, home requirements can be fully met only at the expense of exports. For all other types of machinery (except non-automatic looms) it will be necessary either greatly to increase the productive capacity of the British machinery industry or to obtain machinery from abroad—apparently a strictly limited possibility for some time to come. The need for increasing British productive capacity for automatic looms is a matter of urgent national importance.

(iv) There is need for an independent enquiry into the spinning machinery industry, and for a review of the weaving and winding machinery industries with a view to devising national programmes of production.

(v) Since the completion of the full re-equipment programme which is desirable will in any case (owing to limitations of machinery supplies) take a long time, it is necessary to have a supplementary programme for the improvement and adaptation of existing machinery.

(*d*) *Finance.*—The expenditure which will be involved in a re-equipment programme cannot be closely estimated because of lack of up-to-date information as to existing equipment and buildings. It is clear, however, that it will be on a scale which cannot be financed from the industry's own accumulated financial resources. Provided that facilities are made available (i) for ploughing back profits to be used for re-equipment, (ii) for raising money at the lowest possible rates of interest, the cost of a re-equipment programme need not be regarded as beyond the capacity of the industry to support.

(*e*) *Taxation.*—The present system for taxing industrial profits has prevented and is preventing the accumulation of adequate replacement funds from profits.

(*f*) *Other Points.*

(i) There is a marked lack of comprehensive cost records, and a great need for the introduction of uniform systems of cost-accounting. On the data at present available, it is impossible to make a reliable estimate of what costs for any particular operation ought to be with reasonable standards of efficiency, or of the range of variations in

efficiency between different firms, or of what economies ought to be achieved by the use of different types of machinery or operating methods. It is most important that the great volume of information collected during war-time investigations should not be merely filed and forgotten but studied for the lessons which it can teach.

(ii) The lack of information referred to under (i), combined with other causes, tends to introduce confusing elements into discussions on re-equipment. It is essential that the national need for conserving man-power and the effects of modern equipment properly used on labour requirements, wages and profits should be properly understood.

Chapter VII

DISTRIBUTION

1. In the preceding chapters we have discussed the main elements in the industry's processes of production—the nature of its products, the raw material which it handles, the form of its structure, the brains and hands to do the work, and lastly the tools which they can use. We turn next to consider the methods by which the products are distributed, i.e., all that is involved in the connecting links between the makers of the goods and those who ultimately buy and use them.

2. This subject is obviously of vital importance. An industry, however high its standard of technical efficiency in the processes of production, cannot achieve commercial success unless it makes the right kind of goods for its markets; and it cannot achieve the maximum commercial success unless each item of cost that is put into production adds something to the product which has at least an equivalent value to the ultimate consumer.

3. Looking at the matter from the other end, an industry cannot have a full chance to work profitably unless the consumer demand is fed back to it in such a form as to make it possible to organise production on the most economical lines. If it gets its orders in bits and pieces it cannot organise commercial runs of production and the time of both men and machines will be wasted.

Distributors, therefore, have the extremely important function of interpreting and educating consumer demand so as to give the producers the chance of achieving the most satisfactory results in economy and quality of production.

4. In the case of cotton textiles the distributive function is in a very special sense a distinct function of great importance, since, as is clear from the facts recorded in Chapter IV, the notable feature in the industry's structure is that, for the main part, the determination of the nature and quantity of the goods to be produced is in the hands of the "converters," who belong essentially to the distributive side and represent a separate interest. It is a fair description of the position to say that the producers of cotton goods, with the exception of a relatively few vertically integrated firms, represent an industry whose sales department is detached from it. Other industries—even highly organised industries—are, as is pointed out in a later paragraph, very much affected by wholesale and retail selling charges which are quite outside the manufacturer's control; but in many cases the manufacturer can, through his own sales department, both study and influence consumer demand and thus have a basis on which to plan and operate a production policy for the utilisation of his plant to the best advantage. But the cotton textile producers as a whole (i.e., save for the exceptions noted above) have hitherto relied upon others to fulfil this vitally important function.

5. Bearing in mind this feature of the cotton industry, what we have to examine in the present chapter is how all the various agencies concerned in

distribution are performing their function, so that we may reach conclusions on two main questions :—

(i) Whether distribution is rendering the best possible service to the industry—

in interpreting and educating consumer requirements at home and overseas ;

in discovering and satisfying every potential demand ;

in exploiting to the full the potentialities for distinctive quality in Lancashire production ;

in feeding back orders to the producers in such a form as to help them to attain the greatest practicable economy in production.

(ii) Whether this service is costing too much—or whether the cost can be reduced in the interests both of producers and of ultimate consumers.

These, we submit, are questions which go to the root of the matter. It is on results that the system of distribution must be examined and judged rather than on theoretical arguments as to whether there are " too many merchants." Moreover, what is needed is objective impartial examination. This is not a matter for ill-feeling or controversy between producers on the one side and merchants or distributors on the other. It is one on which both sides should collaborate to their mutual advantage and with full regard for the national interest.

1: COST OF DISTRIBUTION

6. We may start by examining the second of the two main questions stated above. While high quality of service is of great importance, it is essential that it should not cost too much. An efficient producing industry may be pushed back into the red figures of loss if the services of distribution take too large a slice out of the retail price or raise that price to a level at which the ultimate consumer will not buy those particular goods. There is a strong feeling to-day among those engaged in this and other industries that the charges for wholesale and retail distribution take a disproportionate share of the price to the ultimate consumer, and that this matter deserves investigation as a question of national importance. The significance of this question was brought out strikingly in the book recently issued by Cadburys Ltd. (" Industrial Record 1919–1939 ") in which they described the great capital investment and organisational task required to save ½d. on production costs in order to bring the retail price of a two-ounce tablet of chocolate down to 2d., and then pointed out that, in this final price of 2d., only 21 per cent. was represented by production costs as compared with 33 per cent. required for wholesaling and retailing charges which are quite outside the control of the manufacturers. Comparisons of the same kind impress those engaged in the cotton industry. A reduction in the spinning cost of ½d. per lb. of yarn may involve revolutionary changes in production methods and it is not unnatural for those doing this work to ask what total difference this ½d. per lb. will make in the retail price, say, of a shirt weighing little more than 8 ounces, and to compare their effort and its reward with the effort and charges of the distributors.

7. In order to show what an important factor distributors' charges represent in retail prices we have set out in the table opposite a breakdown of such prices for three typical garments. The figures are illustrative and do not necessarily correspond exactly with the costs of any garment currently being produced, though it can safely be said that they do not overpaint the picture. (They have

been made up in the following way. The elements in the costs up to the grey cloth stage were obtained from the Cotton Control and have been calculated in accordance with the Price Control Orders in force in December, 1945, while the costings beyond the grey cloth stage have been worked out according to the methods used for costing Utility articles. It is understood that the margins permitted for Utility goods are no greater than the margins normally charged on this class of article before the war. The straightforward Utility price build-up could not be used because it was necessary to eliminate the effect of the subsidy paid on Utility goods.)

TABLE 35

BUILD-UP OF CLOTHING PRICES: HOME MARKET

	Girl's Dress made from 2⅞ yds. of dyed cambric 36 ins. wide		**Man's Pyjamas** made from 5 5/12 yds. of coloured-woven flannelette 30 ins. wide		**Man's Shirt** made from approx. 3¼ yds. of coloured-woven poplin 30 ins. wide	
	s. d.	Per cent.	s. d.	Per cent.	s. d.	Per cent.
Raw Cotton ...	9·83	6·5	21·47	13·0	14·64	8·4
Spinning ...	5·50	3·7	11·99	7·2	12·51	7·2
Yarn dyeing ...	—	—	4·01	2·4	2·69	1·5
Weaving ...	7·44	5·0	21·08	12·8	18·85	10·9
Finishing ...	8·69	5·8	4·44	2·7	7·14	4·1
Converter's charge ...	4·70	3·2	9·00	5·5	9·85	5·7
Cost of cloth ...	3 0·16	24·2	6 0	43·6	5 5¾	37·8
Garment maker's charges ...	4 2·09	33·6	2 7¼	18·9	3 3¼	22·6
Ex-Factory price	7 2¼	57·8	8 7¼	62·5	8 9	60·4
Wholesaling charges ...	1 6¼	12·2	1 8½	12·5	1 9	12·1
Retailing charges	3 9	30·0	3 5¼	25·0	4 0	27·5
Price to consumer	12 5½	100·0	13 9	100·0	14 6	100·0
Price of raw cotton per lb.	1 0·4		1 0·6		1 3·1	

8. It is striking from this table to see that in a girl's dress selling at 12s. 5½d. the combined cost of the industrial processes (spinning, weaving and finishing) is only 1s. 9½d. or 14½ per cent. of the final price, whereas the charges for wholesale and retail distribution amount to 5s. 3¼d. or 42·2 per cent. of the final price. Or, again, that in the case of a man's shirt the industrial costs are 3s. 5¼d. and the charges for distribution 5s. 9d.

9. The three illustrations in the above table are all cases where the garment makers' charges account for a considerable proportion of the total cost. In order to show the position for an important class of commodity which involves no garment makers' costs we have also made the breakdown given below for a pair of sheets.

TABLE 36

BUILD-UP OF PRICE OF SHEETS

	Pair of Sheets 100 ins. by 70 ins.	
	s. d.	Per cent.
Raw Cotton	52·72	19·6
Spinning	25·49	9·5
Weaving	49·39	18·3
Finishing	15·48	5·7
Hemming, etc.	7·20	2·7
Converter/Manufacturer's charges	21·47	8·0
Manufacturer's price per pair	14 3¾	63·8
Wholesaler's charges	2 6½	11·2
Retailer's charges	5 7½	25·0
Price to consumer, per pair	22 5½	100·0

It will be seen from this table that, even in the case of a pair of sheets which only involves a small making-up charge for hemming, and which represents almost entirely the product of the textile industry, the industrial charges, other than making-up, amount to about 7s. 6½d., while the wholesale and retailers' charges account for 8s. 2d.

10. We have quoted these figures not for the purpose of asserting that the charges made by those who handle the goods after they leave the producers necessarily include undue profit margins, but in order to emphasise how large a part these charges represent of the ultimate retail price; how great an effect might be produced by a moderate percentage saving in distributive costs, and how important it is that this matter should be further studied, so that there may be a clear appreciation of the factors which contribute to making these costs so high. It may then be possible to learn how savings can be effected.

11. The figures in the foregoing tables have shown that the major part of the "distribution cost" is represented by wholesaling and retailing charges, but we must call attention also to the converters' charge. This charge must be regarded as largely part of the "selling cost," as distinct from the "manufacturing" cost. Converters' charges vary according to the class of cloth handled; they are smaller on the relatively standard lines of cloth and larger in the case of cloths where the fashion element, and therefore the risk, is greater. Charges appear to range between 10 per cent. and 20 per cent. of the sum of the price paid by the converter for the loom-state cloth and the price paid to the finisher. The relation between the size of these "margins" and the size of the charges made by spinner, weaver and finisher may be noted. In the case of the cloths exemplified in Tables 35 and 36 above the converters' charges represent between 22 per cent. and 24 per cent. of the spinning, weaving and finishing charges. That is to say, the converter for his services gets between one-fifth and one-quarter of the whole amount charged for their services by spinners, weavers and finishers. It is very difficult to find any standard by which to measure whether the converter's charge can be regarded as excessive. As we point out in a later paragraph, so far as we have had any evidence, it does not indicate that merchant converters in their general activities have in fact been earning undue profits for themselves. But this in itself does not prove that the service has not been unduly costly.

12. In order to judge whether any of the various elements in the "selling charges" are unduly high in the case of cotton textiles it would be interesting

to make comparative analyses of costs and methods of distribution in the case of other products. A full comparative study is indeed in our view badly needed, since this is a problem of national importance. We have not been able to attempt any such study, but, since certain figures have been given for chocolate in the Cadburys' book to which we have already referred, we have compiled another simple table, taking the figures for sheets in Table 36 and comparing them with the figures for chocolate.

TABLE 37

COST BUILD-UP : SHEETS AND CHOCOLATE

Per cent. of Total Cost

	Pair of sheets	Tablet of milk chocolate
Raw materials	19·6	34·0
Production costs (including hemming for sheets) ...	36·2	21·0
Converter/manufacturer's margin	8·0	
Selling and advertising		8·0
Transport		4·0
Wholesaling and retailing charges	36·2	33·0
	100·00	100·00

Although allowance must be made for the different nature of the products in each case, it is at least interesting from this table to see that total selling costs are 44·2 per cent. for sheets and 45 per cent. for chocolate.

13. One question which appears to be suggested by the comparison in the above table is whether the converter/manufacturer who takes 8 per cent. of the retail price of sheets gives a service to the producer comparable to that given for the same percentage by the sales department of a company manufacturing a widely advertised proprietary product.

14. Besides comparing the distribution charges for textiles with those for other British products it is also interesting to know how they compare with charges in other countries. The charges in the U.S.A. seem to correspond very closely to the charges shown above for British textiles. In the next table we give the approximate build-up for cotton apparel and household textiles in America. The figures are averages for these goods as a group. They are derived from information contained in the U.S. Department of Agriculture Technical Bulletin No. 891, March, 1945.

TABLE 38

ANALYSIS OF U.S. CLOTH COSTS

Per cent. of Total Cost

Raw Cotton	10·3
Spinning and Weaving	10·5
Dyeing and finishing cloth	8·5
Manufacturing apparel and household goods	29·9
Total for manufacturing	59·2
Wholesaling	8·2
Retailing	32·6
	100·00

15. The foregoing paragraphs with their illustrative figures have referred mainly to distribution costs in the home market. It has not been possible for us to produce any corresponding illustrations in respect of goods sold in export markets. Charges for the services of British exporting merchants can of course be examined and these are referred to in later paragraphs dealing with the whole question of export selling. What we desire to emphasise at this stage is the need for a closer following up of the methods and costs of the later stages of distribution in the importing countries, i.e., after the point at which at present they normally leave the British exporting merchant's hands. We believe that this is a field in which further investigation is particularly necessary.

16. We have attempted no more than to give a few illustrative examples for the purpose of calling attention to the great significance of the charges for selling and distribution. An investigation, of a much more exhaustive nature than we have been able to attempt, is necessary before drawing final conclusions. The few examples given seem to suggest that the total selling costs for British cotton textiles are comparable to costs for the same work in other countries, or to the costs involved in the distribution of other British products in this country. But, even if this is accepted, two further questions remain to be answered. First, is the British cotton textile industry getting from its distributive agencies services of the same value as are provided for the same percentage charge in other cases? Secondly, is it in the national interest that the process of distribution in general should be so costly? As to the second question, we can do no more than express our very strong view that both the national problem as a whole and also the special problem of the cotton industry need full objective study. In particular we stress the point that the producers of textiles ought to interest themselves in the way in which their products are handled both in the stage of making up and the stage of distribution right down to the ultimate consumer whether at home or overseas.

2. QUALITY OF DISTRIBUTIVE SERVICE

17. In our references to quality of service in paragraph 5, we suggested that it was necessary to ask whether the distributive agencies were serving the industry as well as is practically possible in four main directions.

18. All these questions—and especially the apparent conflict between the demand for variety and the economic advantage of " bulk production "—have been the subject of much controversial discussion. In this discussion there has been a tendency to concentrate attention on the services of merchants and merchant converters in the export trade in piece goods. We wish to emphasise at the outset that the field for consideration is much wider and more complex than that. In the first place the home market is likely in the future to take more than half the industry's products and will certainly be the major factor in what it can look to as its " basic load " in planning its production.* Secondly, piece-goods, especially those which depend for their market on style and variety, are far from constituting the whole of the industry's output. And thirdly, the manner in which the goods are dealt with in all the stages after they leave the " converter's " hands is of great importance. As we have already emphasised, the interests of the producers are vitally affected by the way in which garment makers, wholesalers and retailers perform their functions.

* It used to be said that Lancashire spun for the home market before breakfast, and for all the rest of the day worked on export orders. The position is very different now.

19. There is such an immense number of different ways in which all the various types of product are handled that we cannot attempt in this chapter to give more than an outline sketch of the main features. We propose to deal first with certain questions in a general way, then to consider how the main classes of product are actually handled in the home market, and lastly to examine the handling of exports.

VARIETY OR CONTINUITY ?

20 Among the test points of " quality of service " mentioned in paragraph 17, that which has been most under discussion and which is of the most direct practical significance is that concerning the conflict between " variety " and " bulk production ". There are many questions that arise in connection with this point, e.g. :—

> Have the distributing agencies as a whole forced the industry to split up its work into uneconomic bits and pieces of short orders ?
>
> Has this been necessary or unnecessary ?
>
> If unnecessary, has it been the fault of the merchant converters ?
>
> If " variety " is necessary, does that mean that it is useless for Lancashire to look to the production methods of the American textile industry as a model, or would it be possible by a skilful production-cum-marketing policy to combine distinctive Lancashire quality and variety with production runs of sufficient length to justify the introduction of high speed automatic machinery ?

All these, and a number of other questions, need to be examined since discussion on this topic, as is the case with many of the controversial discussions affecting the industry, has tended to suffer from over-simplification. First, however, if it is desired to find ways for improvement, it is important to examine what have been the facts of the situation.

21. There is much evidence that in certain cases during the inter-war years the splitting up and variation of orders was occurring in ways which made the maximum economy of production quite impossible. The Platt Report (page 30) states that " in the pre-war years two features of the British weaving industry were : (*a*) the wide variety of cloth particulars ; and (*b*) the smallness of the orders available." As an illustration to support this statement the Report gives a list from a cotton manufacturer's order book of 13 cloths with 11 different cloth widths, 9 different counts of reed, 10 different numbers of picks per inch, 12 different counts of twist and 12 different counts of weft. We have had other cases put before us which show the way in which the difficult conditions of the inter-war years had affected the nature of the orders of particular mills, e.g. :—

(1) A vertical mill (spinning and weaving) spinning yarn both for its own looms and for sale, with average weekly output of 110,000 lbs. concentrated up to 1914 on eight yarn counts and six cloths for the Chinese and Indian markets. By 1939 it was spinning 25 different counts, as follows :—

10, 11, 11½, 12, 12½, 13, 13½, 14, 14¼, 15, 16, 16½, 17, 18, 19, 20, 21, 22, 23, 24, 26, 28, 30, 31 and 33.

(2) Particulars of the number of spinning or count changes made in a group of five spinning mills in the last six months of 1938 show that the average output per change varied between 3,450 lbs. and 1,150 lbs. Out of this group, the mill which showed its output per change as 1,150 lbs. had actually 1,400 count changes in the six

months, covering a total output of 1,600,000 lbs. By way of contrast we mention that the number of count changes made in this mill in the six months to November 1945 was 161.

(3) A weaving shed with some 2,000 looms wove on an average 180 different cloths a week, the range of cloth changing from week to week.

22. We must state frankly, however, that the evidence on this matter is not comprehensive enough to justify the conclusion that these cases give a fair picture of what was happening to the industry as a whole. While it is indisputable that many weavers booked a great number of orders for small quantities of cloth, we have not been able to get evidence on which a reliable estimate could be made of the proportion of the total production of plain fabrics in the industry which had to be manufactured in uneconomically small runs. Small orders were sometimes for the stock lines which were already being produced for other customers; in other cases they were "filling-up" orders to occupy a few looms in sheds which were prodominantly engaged in the continuous production of relatively few cloths. For example, an analysis of the 1937 order-book of a manufacturer, carried out by the Cotton Board, showed that the firm booked in all 333 orders, of which the 201 smallest averaged only 6,000 yards each; but that these 201 orders accounted for only 10 per cent. of the production while 50 per cent. of the production was against orders averaging 275,000 yards each and the remaining 40 per cent. against orders averaging nearly 45,000 yards each. This particular firm traded in all with 74 merchants, but 50 per cent. of the cloth was sold to six of them and 90 per cent. to 27. In three other sample cases on which the Cotton Board had information, the manufacturers traded with 20, 31 and 73 merchants but 50 per cent. of their production was for 4, 3 and 4 merchants respectively and 90 per cent. for 11, 11 and 28 merchants. It appears that many converters confine the orders for their standard cloths to very few weavers, who keep a number of looms running steadily on these cloths and have sufficient confidence in their customers to keep the looms running in anticipation of orders even if the actual orders booked are running out. This fact has been confirmed to us by weavers and converters alike.

23. We think it just to add, by way of parenthesis, that although in the 1930's the cotton industry had departed far from the mass production of standard lines practised up to 1914, this change was the result of the loss of overseas markets, especially in India and China, and was not a cause of the loss of those markets. Criticism of Lancashire sometimes suggests that the industry's plight was due to its own folly in refusing to standardise. This was not so. The markets which have disappeared were those previously most marked by mass production methods and the firms which suffered most were those whose plant was laid out for the mass production of a limited range of goods.

24. We have called attention to these balancing examples and considerations, not because we want to suggest that there is not great room for improvement in the link-up between production and marketing, but because we see considerable danger in some of the impressions which seem now to be prevalent. To judge from some of these, one might conclude that all that is required is to avoid gratuitous stupidities practised in the past and that the result will be a magical improvement in the situation. The problem is by no means so simple and easy. What has happened in the past has been largely the result of inherent difficulties, and to achieve substantial improvements will require much constructive thought—above all on the part of the producing sections.

25. And the first thing for the producers to do is to examine whether they have not themselves been to blame in this matter and whether some at least of the possible remedies are not in their own hands. One thing is absolutely clear —that the relation between variety and length of runs cannot be considered without reference to prices. The converters, who themselves readily admit that there is room for improvement, in that runs were often short and cloth constructions were often changed in minor details, claim that they received little encouragement from the weavers to place long-run orders. The weavers rarely offered price concessions for long runs and, indeed, often refused orders which would tie up their looms for far ahead. The plain fact is that both converters and weavers were suffering from the ill-effects of redundant capacity. So long as a large proportion of the looms and spindles in the industry were idle, weavers and spinners were too often forced to base their prices less on their cost of production than on the cost of having plant completely stopped.. The converter, for his part, was exposed to the fear that if he placed orders for substantial quantities of cloth which would not be delivered until several months had passed, he would be undersold in his markets by a competitor who had found a weaver ready in desperation to accept a specially low price for his goods. It is not surprising that in these conditions the converter wanted to be sure, before he entered into long term commitments, that the prices he was paying were really competitive and that the weaver, offered long runs at " really competitive " prices in those days of bitter competition, should prefer to keep his looms free in the hope that trade would improve. Further, as we have already pointed out, our impression is that many weavers had too little knowledge of their own price structure and were unable to estimate accurately the reduction in operating costs made possible by long runs. Their traditional methods of costing on " weavings " was insufficiently precise to enable them to ascertain the true structure of costs and to discover where the possibilities of economy lay. As we emphasise in our recommendations the introduction of scientific costing systems both for spinning and weaving is a vital need and should do much to help both producers and converters to work together on a sound production and price policy.

26. It is clear that in the conditions which lie ahead a very different approach will be necessary. In the inter-war years of cheap labour and well-written-down plant, neither of which could be fully employed, the industry lost relatively little by using labour unproductively and leaving equipment idle. After the war, as we have elsewhere pointed out, with labour scarce and wages much higher, and the consequent need for expensive labour-saving machinery, overhead costs will be excessive if the machinery is kept idle. Of necessity then the cost differential between long-run and short-run cloth will tend to widen, and it will become much more important to plan production so as to ensure not merely long runs on particular orders, but full occupation at all times of all the plant.

The producers cannot prosper in such conditions unless they move their attention forward towards the selling point, and see that the placing of orders is handled in a way which takes account of these necessities. This indicates one of the main points to which we shall refer in our conclusions.

What kind of " Variety " is really needed

27. While, as just stated, we consider that producers should do more to protect their interests by maintaining a proper system of price differentials and thus creating an inducement for converters to bulk their orders, we also consider that producers can play a part in ensuring that the need for " variety "

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is interpreted truly and in such a way as to give the best chance of economic production.

We fully recognise the importance of style, quality and variety; but we cannot accept the view that these requirements must necessarily force the industry to work on small orders none of which is sufficient to give a commercial run to the producer. The analysis given in Chapter II led us to the conclusion that adequate continuity of production could be achieved over a very great part of the total output of the industry. The real needs in the British textile industry are flexibility and inventiveness. It must be ready to search out opportunities for filling "gaps" in the production of other countries, i.e., cases where there is a potential local demand for goods of a quality and price which the local production does not satisfy. It must be ready to plan ahead to fill such gaps and also be alert to seize opportunities for changing styles and introducing goods which have a distinctive attraction.

28. Flexibility or variability of this kind is something very different from variety in the sense of putting out a confusing mass of patterns all at the same time. High quality in fabric and design combined with good value for money should be much more attractive selling qualities than mere multiplicity of patterns. This, we are convinced, is true in relation to the real wants of the retail consumer, and we have formed the opinion from our evidence that the excessive demand for variety arises to a great extent not from the desire of the ultimate consumer, but from the mass of intervening middlemen, each of whom tries to have something distinctive for his own pattern book or shop window. This in fact is one of the cases in which the requirements of the intermediate traders may be in conflict with the ultimate consumer's requirements.

29. Here is one of the matters on which market research is required and it is for the producers in their own interest to see that it is carried out. The kind of conflict to which we have referred creates the type of problem which should be investigated by market research, with a view not only to getting its true diagnosis, but also to collecting data on which a policy for overcoming it can be framed. Another important example of a case for market research is the need to examine, in relation to each main class of goods and each main market, what are the distinctive characteristics which the Lancashire industry is well qualified to introduce, and how to combine the minimum number of different types of cloth construction and finish with the maximum effect in the way of distinctive appeal.

30. We do not suggest that this kind of general objective study is by itself sufficient. It needs to be supplemented by the special knowledge of the channels of distribution possessed by experienced merchants, who must undertake the ultimate handling of the goods. But we feel convinced that the individual merchant can be enabled to do his work better if he has access to the results of an over-all scientific survey and analysis of each market. And we are also convinced that the producers themselves must take an interest in this matter and take the initiative in seeing that such surveys are properly studied. The time has passed when it is sufficient to rely on individual opinions or "hunches," or even on individual experience built up over long years.

We refer to this matter again in our recommendations on market research. Such research would, of course, cover still wider questions.

3. METHODS OF DISTRIBUTION

31. In the preceding section we have considered certain issues of general importance. If, however, practical recommendations are to be made for improvements in the existing arrangements, it is useful to examine in greater

detail how these arrangements work in relation to particular classes of goods and particular markets.

A. Home Market

1. APPAREL FABRICS

32. Apparel cloths represent a most important class of product. From the estimates given in Chapter II it will have been seen that they account for 38½ per cent. in volume of the woven cotton goods sold in the home market.

33. The converter's three main customers for apparel cloths are the maker-up, the wholesaler and the retailer. The percentage of the total supplies going direct to the maker-up varies from one category of cloth to another, depending largely upon the scale upon which purchases are made, which, in its turn, depends upon the extent to which the fashion element enters into the garment and the organisation of the making-up industry concerned. In the case of industrial overalls, for instance, where the fashion factor is unimportant and mass production methods are well developed, the proportion of cloth going direct to the maker-up is considerably greater than in the case of dress fabrics, where fashion is of major importance and there are a large number of small makers-up who normally buy through a wholesaler. Over the apparel field as a whole it has been estimated that 60 per cent. goes to makers-up, 25 per cent. to wholesalers and the balance, 15 per cent., to other classes of purchaser.

34. Seeing that makers-up take 60 per cent. of such an important class of product as apparel cloths, it is clearly a matter of great concern to the textile industry that the business of making-up should be conducted with efficiency, enterprise and imagination. The figures given in Table 35 have shown what a large part of the final retail price for garments is represented by the garment-makers' charges. We have not been able to investigate the making-up industry, and we can do not more than register our opinion that the question whether this industry is well organised and makes the best use of the fabrics produced by the cotton textile industry is one of vital interest to the latter.

WHOLESALERS AND RETAILERS (APPAREL FABRICS)

35. The wholesaler can play a most important part in the distribution of apparel cloths. His main functions are to buy a variety of goods in bulk, to hold stocks and to sell in small lots to numerous small firms. By facilitating the distribution to small firms of a wide range of goods, each required in small quantities, wholesaling, if properly organised, can avoid duplication and waste of distributive effort. In many cases the wholesaler gives further assistance to his customers by extending to them longer credits than they could obtain from manufacturers. In this country many apparel cloths are still sold in the piece over the retail counter; for such trade the wholesaler is normally the link between the converter and the retailer, where he has much the same functions as in the trade with small makers-up.

Some of our witnesses expressed the view that wholesalers, especially towards the end of the inter-war period, were no longer fulfilling their proper function of placing bulk orders with the producing section and holding stock from which smaller customers could obtain quick supplies. This may be true—if so, it would be due very largely to the same cause as so many other weaknesses affecting the textile trade, viz., uncertainty as to what competitors will do in a very weak market. Our view is that if the producers, working together with the converters, organise their position soundly and take a proper

interest in the later stages of distribution of their products, the wholesalers will still have an important function and will be likely to exercise it more efficiently.

36. There has been an increasing tendency in recent years for the larger retailers, especially the large departmental stores and the multiple shop companies, which can buy in large quantities, to go direct to the converter for supplies, or even to set up their own converting business. In some cases, also, direct converter-to-retailer trade has been developed on the initiative of converters who trade direct with a considerable number of small firms, though our impression is that direct trade of this sort needs to cover a very wide range of goods if it is to be economic. Lastly, it is appropriate to include in this paragraph, a mention of the methods developed by the Co-operative Movement. The C.W.S., working with the co-operative retail societies, can link into a continuous chain the stages between production and retail sales. They have been playing an increasingly important part in the field of textiles. We consider that there are most interesting possibilities in the various methods referred to in this paragraph for bringing about a closer connection between producers and retailers. If they are handled with fairness and on scientific lines they can be of great advantage both to the textile industry and to the purchasing public.

We particularly wish to stress the point that the retailer who, is in direct touch with the purchasing public, should play an intelligent part in interpreting and educating public demand and thereby help the textile industry to produce the right kind of goods in conditions which allow the use of economic methods of production. Hitherto, as we have suggested in an earlier paragraph, there is ground for saying that the mass of retailers, instead of helping the industry in this way, have, on the contrary, tended to make economic production more difficult by demanding a measure of variety which is not based on what the ultimate consumer wants but on their own desire to have distinctive lines for competing with each other. This matter is dealt with again below.

37. Apart from the three main outlets for apparel fabrics described above, there are a number of special outlets, e.g., large purchasers like the local authorities, railways, hospitals and other institutions which sometimes buy direct from the converters. These outlets are of considerable importance to the converting firms in this line of business. If conferences are to be held, as we suggest later, at which problems relating to the production and distribution of cotton goods can be discussed jointly by the various trades concerned, representatives of these outlets should not be omitted. They can help the producers to interpret consumer demand, and they can also help to give a steady flow of orders which can be of the greatest value in helping to build up a basic load for the industry.

Design in Apparel Fabric

38. In the case of apparel fabrics, design (in the widest sense) is clearly of primary importance. The main responsibility for determining questions of design has hitherto, as already explained, been carried by the converter. An important question is how the converter has discharged this responsibility and, in particular, whether he has been sufficiently close to the ultimate consumer. Some converters employ their own design staff, others rely mainly on designs bought from independent textile designers either in this country or abroad, e.g., from Paris or New York. Probably most firms combine the two methods. Some wholesalers also have their own design staffs and order cloths from converters to be made to their own designs, but in general this is left to the converter. Frequently, of course, the converter will consult some of his principal

customers before taking final decisions. Production is normally commenced in advance of the sale of cloth, on a scale which depends in part upon the converter's judgment of the general market prospects. Repeat orders to the weavers and finishers depend upon the volume of orders subsequently received by the converter from his customers. (So far as the weaving of relatively plain print cloths, such as many linings, is concerned, the converter can, of course, arrange for forward production of grey cloth with more certainty than in the case of coloured-woven goods, etc.) The initial decisions on patterns are in practice made almost a year before the garment reaches the final consumer. Obviously in these circumstances it is difficult to anticipate " consumer demand " with precision, either as regards volume or design. But we cannot avoid the conclusion that there is great room for improvement in the methods of " anticipation." We further believe that one of the causes of weakness has been the fact that the converter, with whom the main initiative rests, is out of direct touch with the ultimate consumer.

With the present system, if we work backwards from the final stage, we find that the consumer's choice is limited by what the retailer has to offer; this in its turn depends upon the retailer's forecast as to which of the designs offered to him by the wholesaler are likely to be popular; the wholesaler at an earlier stage has made his choice from the range offered him by the converter and the garment-maker; so that we are brought back to the starting point that the deciding factor is the range of designs put into work by the converter.* The question then is what guides the converter in making his choice? Does he rely on any systematic or scientific method for studying the consumer's wishes? Or is the deciding factor the converter's guess at what the consumer will like? We cannot avoid the conclusion that, according to the general practice hitherto, the latter has been the case, i.e., the converter's guess has been the starting point, though at a later stage, when the consumer's actual demand has demonstrated itself, production may be influenced by repeat orders passing back from retailer to wholesaler and eventually to the producers. This is very much a trial and error process.†

39. We believe that much more can be done by using scientific methods of research into consumer demand. We believe, further, that this could make a most valuable contribution to the elimination of waste both in production and in distribution. As already stated in paragraph 30 we do not regard this as a panacea. The method is still in its infancy and, however fully it is developed, there will always be the need for the experience and judgment of the man who knows the channels and has the " feel " of the market. The two methods are complementary. Objective market research is necessary as a background to individual judgment.‡ The textile industry hitherto has relied too entirely on the latter. We should add that many of the representatives of

* We leave imported goods out of account in our consideration of the problem but imports, especially of rayons, were not insignificant before the war.

† One view of the position was given by a retail representative who gave evidence before us. He said, " If a retail store bought fifty novelties and twenty-six proved popular the store was successful. If only twenty-four were popular the store had a bad season. Once a winner was spotted it could run for a long time." It must be realised that in the long run the cost of a " bad season " has to be covered by the margins allowed to distributors. Therefore in the long run either the producer (by having to accept lower prices) or the retail purchaser (by having to pay higher prices) has to carry the burden of the bad guesses made by wholesalers or retailers. It is obviously in the interest both of producers and consumers to get the most efficient system of distribution.

‡It is interesting to note that in Messrs. Cadbury's recent publication " Industrial Record " to which we have already referred, it is stated that " as a result of trial and error it has been found that the order of precedence in research should be: (1) examination of the firm's own internal statistics, (2) market research employing trained field workers, (3) opinions of the firm's own salesmen."

progressive firms who gave evidence before us appreciated the importance of research of this kind and are taking active steps to develop it. But the field as a whole has scarcely been touched.

40. Market research into consumer demand could be greatly assisted if the small retailers could be utilised for carrying out some kind of analysis of the demand and if there were better liaison between the various stages of production and distribution. We have discussed this matter with representatives of wholesalers and retailers who expressed their full agreement as to the importance of consumer research and their readiness to consult with representatives of the other trade sections concerned how best it could be promoted. It seems to us highly desirable that closer liaison between associations representing producers and associations of distributive traders should be established for the consideration of common problems of this sort. Ultimately the application of the lessons of consumer research is a matter for individual firms rather than for trade organisations, but associations in the distributive trades can play a most valuable role by educating their members on the subject and by co-operative efforts in the actual carrying out of the research. We trust that the organisations concerned will take up this matter.

41. In our discussions with wholesalers and retailers we found a considerable measure of agreement: (*a*) that there was scope for reduction in the numbers of different cloths manufactured before the war in order to encourage more efficient production, and (*b*) that competition on price, to the detriment of quality, had gone much too far. As regards (*a*), the views expressed by the trade representatives were subject to the reservation that long runs should not be carried to the stage where variety was excessively reduced or where firms wishing to trade in specialities were unable to obtain them. As regards (*b*), the view was expressed that much of the trouble had risen from the practice of selling garments and piece-goods to fixed retail prices, irrespective of changes in raw material or production costs. This is a point which deserves the attention of the textile industry as a whole. It is very important to know what is the truth on this matter. It was also stated that both traders and the public had learned during the war to attach greater importance to quality and several of those we consulted said that they as individuals had no intention of returning to the old ways.

Standard Qualities of Apparel Fabrics

42. Another point on which we found a measure of agreement was the desirability of introducing minimum standards of quality for many fabrics. The supporters of this measure had mixed views as to how the minimum standards should be introduced and enforced. Some recommended a statutory prohibition on the sale of goods of lower quality than specified standards, others favoured a system whereby goods equal to or better than the standards should carry distinguishing marks which would be popularised by advertisement and by other means of educating the consumer and the trades. The whole subject is a complex and difficult one. Such aspects as the interests of the poorest classes of consumers, the treatment of imported goods, and the practicability of policing the standards, not to mention the determination of the standards themselves, require careful and thorough investigation.

43. Much valuable work has already been done in the matter under the lead of the Cotton Board, but consultation is required between a very wide range of interests. A recommendation on this matter is included in Part II of this Report.

2. HOUSEHOLD TEXTILES AND FURNISHING FABRICS

44. This group includes a wide range of goods, e.g., sheets, pillow cases, tablecloths and table napkins, towels, tickings for mattresses, curtain fabrics and upholstery fabrics. Sheets, pillow cases, tablecloths, towels and similar articles made up wholly from cloth woven in the cotton industry are usually bought by the final consumer in the form in which they are to be used and are for the most part sold by the converter or manufacturer-converter in the made-up state, the making-up usually being done on commission for him. Vertical integration of weaver and converter is more common in this section than in the cloth industry as a whole, although it is by no means general.

45. There has been a tendency in the case of this class of goods, similar to that already noted in the case of apparel fabrics, for the large users, departmental stores, multiple companies, etc., to buy direct from the converter, leaving the smaller retailers to buy through wholesalers, but several of the important makers of sheets, towels, etc., have organisations for selling direct to small retailers. An important part of the trade is done with large institutions, schools, hospitals, railway companies, etc. These goods were also sold in large quantities before the war to mail-order houses and for gift schemes run by non-textile firms. We gather that this class of trade was done on very narrow price margins.

46. There are a number of cases where special arrangements prevail, e.g., several of the specialist furnishing fabric wholesalers who handle the more expensive type of furnishing fabrics (often jacquard woven fabrics which therefore require no " converting " in the usual sense) have cloths of this kind woven in their own exclusive designs and are, in fact, the primary distributors of them.

47. Many of the remarks made in the section on apparel cloth apply to the household textile group. In particular, the case for minimum quality standards was pressed strongly by manufacturers and distributors alike. They added to their representations on minimum quality standards the suggestions that size standards should be introduced for articles such as sheets, towels, etc. It was stated in evidence that before the war towels were offered to the public in at least 25 different sizes and sheets in about 22 sizes. According to our witnesses, it was thought that in each case six sizes would be sufficient to meet practically all public needs. The need for standardisation was urged not only on the ground that it would assist production efficiency but also to protect the consumer. An instance was quoted of sheets described as " approximately 70 ins. $\times$ 90 ins." which were, in fact, only 66 ins. $\times$ 86 ins. Accordingly one of our later recommendations is for an inquiry into the desirability and practicability of introducing minimum standards and for the promotion of consumer research applying to household textiles as well as to apparel fabrics.

3. INDUSTRIAL USES, SURGICAL DRESSINGS, ETC.

48. Cotton cloths for industrial purposes are for the most part sold direct to the industrial user or to wholesalers who specialise in supplying the needs of certain industries. Shoe linings, for instance, are frequently sold by the converter in Manchester to " factors " in Leicester or Nottingham. In some cases the users themselves undertake the weaving of much of the cloth they need, *e.g.*, some makers of tyres weave their own tyre fabrics, and the bulk of the surgical dressing fabrics produced are woven in sheds belonging to the surgical dressings firms.

49. Our general impression about the distribution of goods in this class is that the need for overhauling, or the opportunity for improving, the existing arrangements is not so great as in the case of apparel cloths and other fabrics where there are often many intermediaries between the converter and the final consumer and where fashion and design play an important part.

50. On the other hand, in considering how best to secure a rationalised and economic system of production in the cotton textile industry as a whole, this important section of production must be taken into account. In public discussion both it and the section concerned with household textiles tend to be left out of account.

B. Export Markets

51. In Chapter IV we described in outline the structure of the merchants and merchant converter section of the industry. In order, however, to understand how the various elements engaged in conversion and merchanting fit in together it is necessary to go into further detail. In the following paragraphs we deal with converters and export business. As pointed out below, however, a large proportion of the converters are concerned both with export and home business.

Different Classes of "Converters"

52. Converters doing export business fall into two main classes (*a*) cloth specialists and (*b*) market specialists. The former concentrate upon limited ranges of cloth, e.g., shirtings, and sell them wherever they can, the latter concentrate upon fewer markets but sell in them any kind of cloth for which they can obtain orders. In practice the distinction between the two classes tends to get blurred. Cloth specialists who find that certain markets give better results than others will concentrate upon them; market specialists may concentrate most of their efforts upon the sale of particular types of cloth.

53. Another broad classification of exporting converters is into stock houses and indent houses, but inasmuch as stock houses are firms which trade in a limited range of cloths, of which they carry stocks in anticipation of demand, whereas indent houses are those which seek orders for a wider range of cloths on the basis of samples and arrange bulk production only against firm orders, it is broadly true to say that the cloth specialists are often stock houses and market specialists are indent houses. It is also true that the line of demarcation between stock house and indent house often becomes as blurred as that between cloth specialist and market specialist. Most indent houses, for instance, run stock lines.

54. The stock houses tend to be those trading with the Dominions and other markets which take cloths very similar to those which sell at home, and they are frequently home trade houses as well as exporters. Having a broad basis for their trade, they incur less risk in carrying stock. Moreover, they are often able, by dovetailing their requirements for home trade and for export, to contribute to economy in production. Firms specialising in markets which require cloths of designs or widths very different from those which sell elsewhere cannot hope to offset a miscalculation of the potentialities of one market by increased sales in another; thus stockholding is discouraged and trading on an indent basis takes its place.

We are informed that the tendency is for trade on stock house lines to expand relatively to trading on indent orders.

Table 29 in Chapter IV showed that the number of export converters (cotton and rayon) in 1940-41 was approximately 1,454, of whom 577 were

concerned only with cotton goods for export, 62 were concerned only with rayon goods for export, and 116 were concerned with both cotton and rayon but only for export. The remaining 700 odd were all concerned with home trade to a greater or lesser extent.

55. The categories of firms dealing with export trade can be classified in another way as follows :—

(i) Converters (including manufacturer/converters), some of whom act to a small extent as pure merchants.

(ii) Buying branches of overseas importers. Some of these firms do their own converting, some buy finished goods only.

(iii) Confirming houses. Some of these finance and ship only, in respect of transactions made in the first place direct between the converter in this country and the importer overseas. Others act as buying agents for the importer, as well as financing the purchase and shipping the goods. Some act also as pure merchants.

(iv) Pure merchants, who buy goods on their own account from converters and resell them in the same state. Some of these merchants are general export merchants in whose business textiles play only a small part.

56. The Cotton Board Direction of Exports Department has estimated that during the war years direct shipments by converters accounted for 55 per cent. of the total, shipments through the buying branches of overseas houses for 5 per cent., indirect shipments through confirming houses for 30 per cent. and shipments by pure merchants for 10 per cent. A large proportion of the orders handled by confirming houses are, however, booked directly between converter and importer in the first place.

These estimates cannot be taken as giving an exactly accurate picture of the pre-war position but serve to give a general impression of the broad lines of how the trade was done.

Methods of Conducting Export Business

57. Exporting firms carry on their business with overseas countries in a variety of ways. In some cases they have their own branches overseas, in others they use agents. Agents are of several kinds, e.g., the agent employed solely by the exporting house, the agent who handles other business as well, but not other cotton goods, the agent who handles textiles only but represents a number of firms, and the agent who handles a wide variety of goods for a number of firms. A single exporting firm may be represented in different ways in different markets according to the needs of the markets, the scale of its operations in them, etc. Whatever the method of representation, the progressive firm will normally seek to send a representative to visit each important market at least once a year. Before the war the more readily accessible markets, e.g., in Scandinavia and Western Europe, were visited three or four times a year; the development of air travel after the war is likely to lead to more frequent visits being paid even to the more distant markets. This must be noted as a factor of the highest importance, which will create opportunities for new methods.

58. Among the changes in trading methods which took place between the wars may be mentioned one which developed most markedly in trade with the Dominions. Originally the bulk of the business was done by " speculation " samples through the London confirming houses, but for the last 10 to 15 years

by far the greater part of the trade has been booked by the converters' representatives on the spot. Much of the trade continues to be confirmed by the London houses, but this is only a facility for the overseas buyers who employ them. A similar tendency has developed in trade with India.

59. In current popular discussion of cotton industry problems there has been a good deal of criticism of British exporting merchants. The most common complaint is that there are too many of them and that the industry suffers from this multiplicity in three main ways:

(i) That the resulting smallness of the average turnover per merchant means that the costs of the merchant's services has to be a good deal higher than would be possible if the trade were concentrated in fewer hands.

(ii) That the competition between British merchants has tended to depress the selling prices of our goods in some overseas markets which would not otherwise have been "price" markets.

(iii) That by breaking up the trade into unduly small fractions the merchants were not able to give producers orders of a size suitable for economical production.

A further complaint often heard is

(iv) That converters, and exporting converters in particular, had, in the inter-war years, tended to be over-cautious and to refuse to take the risk of carrying stocks. This, it is said, has had adverse results in two ways. In the first place, producers have had to cope with a number of small orders obtained on an indent basis instead of being given the long-run orders which making for stock implies; and, in the second place, orders have been lost because the converters have been unable to give quick delivery, especially with repeat orders.

60. Our impression is that there is some substance in points (ii) and (iii) mentioned in the last paragraph; but we wish to make it clear that we have received no evidence which would justify a charge that the merchants have been "fleecing" the industry in the sense that they have been insisting on undue profits. We have, for example, seen a summary of particulars supplied by 14 important shipping merchants which indicates that the profits which they have earned have been on a very moderate scale in relation to the capital employed. The truth rather seems to be that the merchanting section as a whole, like the producing section, had been organised to deal with an export trade of immensely greater volume than that to which it fell in the inter-war years, and that the industry in its present size is left with a merchanting organisation too extensive for its present needs.

61. As to point (iv) mentioned in paragraph 59, we enquired into this specifically with the converters' representatives, who replied that in the inter-war period converters held stocks to a greater extent even than previously, as orders were smaller but more frequent and only by this service were they able to retain much of the business. At our request and in order to ascertain the facts the Cotton and Rayon Merchants' Association invited their members to make a return, through a firm of Chartered Accountants, showing their purchases and their stocks in each of the years 1913, 1924, 1929, 1931, 1937 and 1938. 110 firms completed the returns for each of the six years specified;

423 firms gave returns for some or all of the six years. The results, which can, we think, be accepted as a fair sample of the trade, were as follows :—

	Stock as percentage of Purchases					
	1913	1924	1929	1931	1937	1938
110 firms making returns for each year	19·6	23·5	23·1	24·9	27·2	28·6
All firms making returns ...	19·7	23·0	22·4	24·9	27·9	30·8

These figures show that stock-holding, in relation to the volume of trade done, has tended to increase over the last twenty years.

62. Whatever significance may be attributed to the figures in the last paragraph, it seems clear that the holding of large stocks in overseas countries, e.g., in India, has declined. The exporting converters maintain that they gave up the practice of holding stocks abroad only after the markets had been lost, and that, in fact, they persisted in holding stocks long after it was wise to do so, in the hope of recovering their trade, and involved themselves in heavy losses in consequence. They say that to have held stocks in later years in many markets would have seriously weakened the exporter's position vis-a-vis the dealer abroad. We think there is substance in the exporter's case on this matter and, indeed, we regard this as another example where Lancashire is criticised for losing markets through failure to adopt a particular selling technique, whereas in fact the technique in question was practised by Lancashire until after the markets had been lost. None the less the exporting converters would probably themselves admit that bad trading conditions between the wars fostered caution rather than enterprise and that over the trade as a whole new methods and more vigorous enterprise will be needed after the war.

THE NEEDS OF THE FUTURE

63. It is these last words that point to the matter of practical importance. We have taken a great deal of evidence bearing on charges of this kind recorded in paragraph 59 but in our view it is a waste of time to spend it on arguments about the past. Every fair-minded observer must admit that conditions in the inter-war years were terribly discouraging. Effort should be concentrated now on seeking constructive policies for dealing with the new problems of the future. What is wanted is good new trade, not good excuses for the loss of old.

64. Our conclusion as regards export trade is that the industry as a whole ought to go out boldly for new business, basing its effort on :—

(i) Much closer collaboration than has existed between producers and all classes of merchants and distributors.

(ii) A thorough scientific survey of possibilities in each different market, to be available as a background to the personal experience of individual sales representatives.

(iii) The creation of an organisation in which all sections should participate to give effect to (i) and (ii).

65. These are features which should be part of a general policy covering home trade as well as export trade. They can therefore be more properly developed as part of our general conclusions and recommendations. Before, however, concluding this section on export trade we wish to emphasise how

important it is to adapt methods to the special conditions of each export market and for the producing industry as a whole to satisfy itself that each important potential market is being fully covered by the appropriate methods. The present chapter, in order to constitute a full factual survey, ought to have included some statement of the way in which each important market is being covered, and of the future steps which appear to be required in each case. Although we received a good deal of evidence on this subject, we have not included the results in our review, partly because the future is so uncertain, and partly because we felt doubts about the wisdom of publishing detailed statements on matters of this kind. What we do, however, wish again to emphasise is the need for devising methods suited to each market and for taking account of the changed conditions in each. To plan a programme of exports of piece-goods, say, to West Africa where native requirements can be forecasted with fair accuracy, and where some of the largest exporters have their own distributing stores, is a very different problem from that of devising means for establishing close links with the garment makers in the U.S.A., or for finding new opportunities for the sale of high-class European styles in a post-war India. We fully appreciate that among the firms operating from Manchester there are many who have a skill in merchanting and an experience of local conditions of various countries which are unequalled in the world; but we are not satisfied that enough is being done to keep the position as a whole under survey and to ensure that the activities are being carried out at all points on the high level of the best firms, or that the sum of the individual efforts is producing a total result which is so adequate as to leave no gaps uncovered. It is for watching the total measure of achievement in export markets that the producers should combine in a new way. It is for the producers also to review the position as a whole in regard to production for export markets and the home market considered as a single production problem.

4. MARKET RESEARCH

66. At various points in this chapter we have stressed the need for market research carried out objectively and by scientific methods. Just because we attach such importance to this method we are anxious to avoid making exaggerated claims for it. We look to market research to provide broad objective surveys of market opportunities and of all the factors which may affect them. Information of this kind is an indispensable supplement to the judgment and technique of individual sales representatives. But it is no more than a supplement. It cannot supply their contacts or in any way do their work. By well conducted market research it ought to be possible to learn:—

(i) what is the potential extent of the market demand in any particular country or locality for particular classes of goods;

(ii) what share of this market a particular firm or British firms generally are getting;

(iii) what share they *ought* to be able to get.

If (ii) is less than it ought to be, market research may further help to indicate the reasons why, and may indicate the importance of various factors such as price, style, methods of retail distribution and display. In that way it may help suppliers to increase their sales; but market research cannot sell goods, or guarantee suppliers that they will be able to sell specific quantities of specific types of goods. Market research enquiries can also be usefully directed to studying specific matters, e.g., the methods and costs of distribution used in overseas markets for British goods after they have left the hands of the British exporter. Another important question for study has already

been referred to. It is quite possible that the intermediate traders to whom the exporters sell may have requirements suiting the conditions of their own trade which are really in conflict with the requirements of the ultimate consumer. Conflicts of this kind must be studied and overcome. Lastly, market research should cover a number of factors likely to influence sales outlets for British goods which the ordinary sales representative does not normally take into account or is not qualified to evaluate (e.g., political influences in a country like India). It is possible that the long-run effects of such factors may completely outweigh the short-run results of clever selling methods.

67. If market research is to be of value it must be undertaken thoroughly, on an adequate scale and continuously. It requires specially trained personnel, and a single investigation may call for the services of a number of trained observers and investigators at the same time. One of the practical difficulties at present is the shortage of properly trained personnel. If the cotton industry is to make use of this method it will be necessary to provide ample funds, to take long views, and to inaugurate schemes for the training of personnel.

68. In conclusion we must repeat that the provision of a more comprehensive background of knowledge is a vital need and is one to which the industry as a whole must apply itself. The time has passed when an important producing industry of this kind can protect its future if it merely turns out its products regardless of the channels into which they are going. Conditions are constantly changing and these changes must be kept under survey and selling methods adapted accordingly. In the case of the cotton textile industry, for example, we think it is probably true to say that it is becoming less and less a matter of producing piece-goods which are sold as such to the ultimate consumer. Those conditions may still prevail in the few overseas markets for native styles; but the industry in general needs more and more to adopt a scientific approach and to consider in the case of each type of goods and each market exactly what is the particular channel which it ought to feed and at what point it ought to terminate its own activities and link up with some other agency.

69. On a great number of points there is a need for much more accurate knowledge than is at present available, particularly on the working of all the methods of distribution and the relation between production processes and consumer demand. We have been glad to note the Government's appointment of a Committee to advise on how a Census of Distribution should be taken and we trust that a regular Census will be inaugurated without delay. The results of such a Census should throw a good deal of light on problems affecting the cotton textile industry; but we consider that there is need for investigation into the distribution of textile goods of a much more detailed kind than would be possible in any general Census of Distribution. As we suggest in our final recommendations, something like a continuing survey of distribution of a very full kind is needed by the textile industry. Moreover, it is of special importance that the producing sections should take an interest in the matter, since the knowledge obtained has to be applied in regulating programmes of production.

CONCLUSIONS

70. (*a*) On a review of the facts we cannot avoid the conclusions :—

(i) That charges for distribution have been taking a toll of the industry far larger than is consistent with the national interest.

(ii) That there is room for substantial improvement in the quality of service rendered by distributors as a whole in the way of interpreting consumer demand and presenting orders to the industry in a form suitable for economic production.

This conclusion is not put forward as a criticism of any particular class of distributors.

(*b*) The outstanding characteristic about the cotton textile industry is that except in the case of a few vertically integrated firms it has been operating as an industry whose sales department has been handled by separate and independent interests. Some idea of what this separation means can be got by considering the difference between the relation of the sales force to production which exists in an undertaking which handles the selling of its own products and that which has been normal in the cotton industry outside the few vertically integrated concerns. In the former, if a sales representative in a particular market encounters difficulties in selling one of his firm's lines, the firm, knowing what it means to have to turn away hands or leave machinery idle, insists that means be found to overcome the difficulties. All the interests are united and the pressure of urgency is applied. But the detached merchant, who can buy where he likes, naturally tends, when he meets difficulties in disposing of a particular line of goods, to look for another line, possibly from a different producer, or even from a different country.

(*c*) The result described in (*b*) affords no grounds for criticising the merchant, but it does make clear the necessity for the producing sections to take the initiative and to put themselves in a position (i) to check up on the kind of service which they are getting in the marketing of their goods and (ii) to take action to ensure a better service if the results of (i) show that to be practicable and desirable.

(*d*) The necessary improvements cannot be secured only by tackling the problem from the merchanting end. The steps must start from the producer's end and the drive must come from them.

The following are some of the points which demand initiative and action by the producers :—

(i) They must see that they understand their own costs structure and that in quoting prices for their products they get a proper " differential " for " short " as compared with " long " runs.

(ii) They must take an interest in what happens to their products beyond the stage hitherto handled by the " converter " or export merchant. They should endeavour to promote methods of collaboration which may serve to reduce wholesale or retail charges. In this connection there is a special need to get more information as to the way in which goods are handled in overseas markets between the point of leaving the exporter's hands and reaching the ultimate retail consumer.

(iii) They should promote the study of consumer requirements. In particular they should be interested to learn what the ultimate consumer requires in the way of style, price and variety.

(iv) They should see that an overall survey is maintained of export markets, so as to ensure that no possible gaps are left unfilled, and that proper account is taken of long term trends and forces which may not be observed by the individual representatives of exporting houses.

(*e*) In order to provide information of the kind referred to under (*d*) there is a need for a programme of systematic market research. It is for the industry as a whole to see that this is carried out.

(*f*) A great many useful developments have recently been taking place, which have tended to bring about a closer linking up between production, distribution and consumer demand. All these deserve encouraging, and the producers should take the initiative in their further encouragement.

(*g*) There is a special need to consider production for the home market and for export as constituting together an integrated production programme.

(*h*) If the producers act together it should be possible to effect the necessary improvements without attempting any revolutionary change in the organisation of the industry—as for example getting the whole of it organised into completely integrated vertical units. Whilst it is desirable that a movement toward integrated groupings should continue, a wholesale change of the existing horizontal structure is not practicable.

Chapter VIII

MARKET PROSPECTS

1. Our Report would be incomplete without some attempt to review the position and prospects in regard to market outlets. But we approach this part of our task with considerable reluctance. The guiding thought in all that we have to say is that the cotton industry must pull *itself* together, must show initiative, enterprise, readiness to take the lead in developing new possibilities. In short, it must strive to be master of its own fate, not sit passively waiting for something to turn up. Therefore we shrink from anything like building on future prospects. We wish neither to create complacency by parading great expectations nor to discourage ventures by prophesying hard times. On the other hand we do, as we have already made clear, recognise that the industry has in the past suffered under shocks from external forces which it could not control, and, looking to the future, we also recognise that external conditions will affect what can be achieved and that a forward looking policy must take account of such conditions. But all appreciations of these must be taken as liable to great error, since there is so great an element that is unknown. We shall not do more than indicate the possibilities and the main factors which will have an influence on them.

2. Apart from the industry's own ability and enterprise, and the degree of competitive efficiency which it is able to attain—which we put first as all-important—the main conditions which will affect the future are :—

(i) Conditions in this country :—

(*a*) The degree of success which attends this country's domestic economic policy—the policy for full employment, high wages and social security.

(*b*) The extent to which the people of this country in all grades will *work*, since without high standards of work success under (*a*) is impossible.

(ii) International conditions :—

(*a*) The general regime of international trade which is built up as a sequel to the International Conference on Trade and Employment which is due to take place this year.

(*b*) The special conditions affecting the development of the Japanese industry.

This statement of international conditions is in no sense exhaustive ; we have merely selected the main points in the foreground of a general view of world prospects. An attempt to paint a full picture of that view would be out of place in this Report.

3. The Cotton Board Post-War Committee attached to their Report estimates of trade in the period some years ahead when post-war conditions might be regarded as stabilised. They said :—

> " Dealing first with the home market it may be supposed that conditions will then be such as to permit of a slight increase in consumption above the pre-war level. The pre-war level of home consumption is taken as the annual production of cotton and rayon goods for final use in the home market in the three years 1935–37 (in order to average out stock movements) and an increase of about 5 per cent. is allowed on these figures. A considerable increase in the proportion of rayon consumed is expected. . . . In estimating the export trade we are faced with the initial difficulty of assessing the basis of international trade in the post-war period. We can only make certain

estimates within which all possibilities may reasonably fall. This we have done, and in the result we give three estimates formulated after much consultation with market experts. The first, Estimate (1), is based more or less on a maintenance of the *status quo* so far as the basis for our overseas trade is concerned. The second, Estimate (2), assumes changes which will prove disadvantageous to our competitive position, and the third, Estimate (3), assumes a new state of affairs as favourable as the more optimistic of our consultants could prudently regard as possible. . . . The home trade and export requirements are summarised (below) so as to show the total post-war demand on the spinning and weaving industries. In doing so account is taken of all the various products requiring yarn from the spinning section and cloth from the weaving section.

COTTON BOARD ESTIMATES OF POST-WAR TRADE

	1937	Post-war		
Spun Yarn (million lb.)		(1)	(2)	(3)
Home Market	699(*a*)	700	700	700
Exports: Cotton piece goods	401	269	135	436
Rayon piece goods	3	9	3	16
Mixture piece goods	5	5	2	7
Other woven goods	30	31	17	43
Yarn	159	124	96	215
Thread	16	16	16	16
Other goods	26	26	13	40
Total requirements ...	1,339	1,180	982	1,473
Woven Goods (million sq. yds.)—				
Home Market	2,210(*a*)	2,300	2,300	2,300
Exports: Cotton piece goods	1,921	1,284	648	2,090
Rayon piece goods	38	70	23	130
Mixture piece goods	42	40	20	60
Other woven goods	105	110	60	150
	4,316	3,804	3,051	4,730

(*a*) Average 1935–37.

1. HOME MARKET

4. The Cotton Board Post-War Committee's estimate of home sales, given above, provides for an increase of about 5 per cent. as compared with pre-war. An increase of this amount on pre-war consumption seems moderate, but it is possible that the pre-war figure is unduly high—the three years on which the average was based included the year 1937, in which production was very high and led to considerable stocking-up. It was followed by a 30 per cent. drop in 1938. If the four years 1935-38 had been taken as the basis, the pre-war consumption figure would have been reduced to about 2,100 million sq. yds., on which the post-war estimate of 2,300 million sq. yds. would represent an increase of nearly 10 per cent.

5. On the other hand, as affording possible justification for an optimistic estimate of the increase in home demand, the following points may be mentioned:—

(i) Heavy unemployment reduced demand before the war. A successful full employment policy should mean a greater demand for consumer goods.

(ii) The re-distribution of income, which has taken place as a result of the war, and the social security policy now proposed, may cause an increased demand for cotton and rayon textiles (apparel, sheets, furnishings, etc.), even without any increase in the national income as a whole.

(iii) The development of cheap and attractive textiles, based on the new fibres, may increase the share of the nation's spare cash used to purchase Lancashire products (cf. the great increase in the demand for women's stockings before the war).

(iv) Nearly 30 per cent. of the pre-war output of cotton yarn and about 20 per cent. of the output of woven cloth for the home market was used for industrial purposes (machinery belting, mechanical cloths, cleaning cloths, etc.). An effective full employment policy may lead to increased mechanisation and thus to an increase in the demand for cotton goods for these purposes.

So far as concerns the proportion of rayon yarn used, we agree with the Cotton Board that there is likely to be a considerable increase.

2. OVERSEAS MARKETS

6. Long term export prospects for the U.K. cotton industry depend upon the total volume of international trade in cotton goods and on the share of the trade which the U.K. is able to obtain. The major factors governing the size of international trade in cotton and rayon goods are :—

(i) Total consumption, which fluctuates with world prosperity (and also, *inter alia*, with the price of cotton goods).

(ii) The extent to which total consumption is met by local production. This in its turn depends upon

(iii) The policy of governments regarding protection (by tariffs, quotas, etc.) for local industries.

7. The major factors governing the size of the U.K.'s share in the international trade in cotton and rayon goods are :—

(i) Our ability to compete on price, quality, etc. (The future of Japanese competition and the potential competition of other countries—especially Asiatic countries—with low labour costs are a special aspect of this.)

(ii) International policy regarding tariff preferences, quotas, exchange rates, etc.

As will be seen from paragraph 3 above, the Cotton Board Post-War Committee's estimates of long-term annual requirements for exports range from 282 million lbs. of spun yarn and 751 million square yards of woven goods on the least favourable basis to 773 million lbs. of spun yarn and 2,430 million square yards of woven goods on the most favourable basis.

International Trade in Cotton Goods

8. In considering the general prospects of an increase in international trade, the outstanding point is that the trend in the inter-war years was one of marked decline in cotton textiles as an article of international trade. They were becoming more and more an article of domestic production in all countries. Between 1913 and 1939 world consumption of cotton goods was increasing; but the quantity of cotton goods handled in international trade was decreasing. World trade depressions (e.g., in 1930 and 1931) caused setbacks in the upward trend of the consumption of cotton goods which were only temporary and subsequent recovery carried consumption beyond its pre-depression level. The setbacks in the international trade in cotton goods on the other hand were much more severe and were not fully recovered before a new depression carried the total to a new low level. The following index figures for 1913, 1928 and 1937

illustrate the point. Each of these three years was at about a peak in the curves of total consumption and of international trade :—

	1913	1928	1937
World consumption of raw cotton ...	100	118	136
International trade in cotton goods (volume)	100	88	62

26 per cent. of world production of cotton piece goods were exported in 1928 ; by 1937–8 the proportion was 18 per cent.

(The above figures take no account of woven rayon, but the argument is not invalidated thereby.)

9. The development of local industries was fostered by the active assistance of the governments concerned. It was further stimulated by the experiences of the 1914–18 war, the 1930–31 depression, and the tendency, which was growing throughout the inter-war period, to adopt national policies of economic self-sufficiency. India, at one time by far the largest importing market in the world, affords an outstanding example :—

TABLE 39

INDIA : TARIFFS AND PIECE-GOODS IMPORTS

Year	Tariff Protection (per cent)		Home production (mills) million sq. yds.	Imports million sq. yds.
	British*	Foreign*		
Av. 1909–13	Nil		1,141	2,741
1924	7½		1,841	1,705
1926	11		2,226	1,784
1929	11		2,359	1,910
1930	15	20	2,494	1,254
1931	25	31¼	2,900	741
1935†	25	50	3,555	1,033
1937	20	50	3,951	688
1938	20	50	4,250**	724

* Minimum specific duties were also in force from 1930 onwards.
† Quota restrictions were imposed on imports from Japan as from 1st January, 1934.
** Estimated.

Brazil, Argentine, the U.S.A., Egypt and Turkey are other examples.

U.K. SHARE OF INTERNATIONAL TRADE

10. The development of local industries behind protective walls was the major factor in the decline of international trade and therefore of U.K. cotton exports, but in addition the U.K. share in total international trade in piece goods fell sharply as a result mainly of Japanese competition.

TABLE 40

U.K. AND JAPAN IN WORLD TRADE

Average of	YARN		CLOTH			
	Exports from U.K. million lbs.	U.K. percentage of total export trade	Exports Million sq. yds.		Percentage of total export trade	
			U.K.	Japan	U.K.	Japan
1928–9	168	29	3,769	1,605	44	19
1937–8	141	36	1,655	2,412	26	39

Japanese competition was based on a number of factors, but low labour costs were predominant. It has been estimated that in 1936 the weekly wages paid to Japanese operatives, including payments in kind, were less than one-sixth the rates payable in Lancashire.

11. No western country was able to face Japanese competition. The Dutch lost their markets in the Netherlands East Indies, Italy was beaten in the Netherlands East Indies, Egypt and South America, the Americans were beaten in South Africa, the West Indies, and, in 1935–37, in their own home markets. The U.K. suffered most because the U.K. had most to lose.

12. Whilst the U.K. trade in general suffered heavily for the reasons explained above, there were, from 1932 onwards, special cases in which a reciprocal trade agreement and other arrangements had the effect of giving preferential treatment to U.K. goods. The following table brings out the increasing extent to which U.K. exports of cotton goods were concentrated upon these markets :—

TABLE 41

U.K. EXPORTS OF COTTON PIECE GOODS

Million square yards

	1933	1935	1936	1937	1938	1939	1939 as percentage of 1933
Total ...	2,031	1,949	1,917	1,922	1,387	1,393	69
Dominions	384	389	405	450	390	435	113
Quota Colonies	171	275	310	301	155	158	92
Trade Agreement Countries*	306	274	267	278	229	272	89
India and Burma	486	543	416	356	293	215	44
All Others	684	468	517	537	319	313	46

* Norway, Sweden, Denmark, Finland, Latvia, Lithuania, Yugoslavia, Poland, Turkey, Argentine, Hungary, Peru.

It will be seen that the piece goods exports sent to the Dominions, "Quota Colonies" and Trade Agreement countries amounted to the following percentages of the total exports to all countries :—

1933, *42%*; 1935, *48%*; 1936, *51%*; 1937, *54%*; 1938, *56%*; 1939, *62%*.

Future Prospects

13. It is not unreasonable to expect that world consumption of cotton goods will probably increase after the war. The industrialisation of India and China and the development of Africa, for instance, may add greatly to the purchasing power of large masses of consumers of cotton goods. But, as shown by the statistics recorded in the preceding paragraphs, expansion in world consumption of cotton goods can by no means be relied on to result in a corresponding expansion in world trade in cotton goods. The increased demand in India and China is likely to be met very largely by the expansion of the Indian and Chinese cotton industries. Production in many countries has expanded very considerably during the war and the pre-war tendency for

the primary producing countries to develop secondary industries has been stimulated by the difficulties of getting imports during the war years.

14. As to what has already happened, the following tables extracted from the Cotton Board's Post-War Report are of interest :—

TABLE 42

COTTON PIECE GOODS : PRINCIPAL PRODUCERS

Million square yards.

	1937		1942	
	Production	Exports	Production	Exports
U.K.	3,806	1,921	1,850	485
U.S.A.	9,321	236	12,000	450
India	5,548(*b*)	120 (*a*)	5,800 (*b*)	940 (*a*)
Brazil	900	7	1,400	250
Mexico	370	—	500	30
Canada	245	5	350	20
Other accessible countries, excluding Russia and the Continent	800	—	2,100	—
Total	20,990	2,289	24,000	2,175

(*a*) Exports by sea, excluding Burma.

(*b*) Including hand-loom production.

The above figures indicate that between 1937 and 1942 total production in these countries had expanded by 3,000 million sq. yds., i.e., more than the maximum Japanese exports.

" Other accessible countries " in the above table are defined as comprising Persia, Turkey, Egypt, the Near East, Central and South America and Australia. The Report explains that the production of these countries in total has been estimated from cotton consumption figures published by the New York Cotton Exchange and adds that while it is often difficult to make an estimate for individual countries, reliable information has been obtained in the following cases :—

TABLE 43

COTTON PIECE GOODS : OTHER PRODUCERS

Million square yards

	1937	1942
Argentine	152	300
Peru	50	100
Colombia	30	100
Venezuela	15	45
Egypt	77	370
Persia	150	240
Syria	—	50
Palestine	3	36
Australia	9	30
Total	486	1,271

15. Industries which have expanded during the war will strive to stay expanded ; some by securing a greater share in their home markets at the expense of imports, some by exporting on a scale unknown before the war.

Countries such as Brazil and India will doubtless find export markets less easy to secure after the war, and India, in particular, may for some time be engaged mainly in coping with home-trade needs, but both are in the long run potential competitors in export markets. India is known to be plannning large expansions. According to a review of overseas developments, carried out at our request by the Textile Exporters' Committee of the Manchester Chamber of Commerce, plans for starting or expanding cotton textile industries are being developed in Canada, Australia, Egypt, Palestine, Syria, Persia, Netherlands East Indies, Africa and South America. China will be in the export field. The European producers which lost markets to Japan will seek to regain them. For all these reasons competition in the long run is likely to be intense.

16. A major factor affecting future prospects will of course be the position of the Japanese industry. We cannot predict its future. We have seen reports that its equipment has been severely damaged in the war, but such damage need not necessarily have any permanent effect. The Japanese industry will surely revive if it is not prevented by deliberate measures from doing so. Many expectations are current which assume the existence of such measures, but the question which must be asked is: what State will maintain peace-time internal control of Japan over anything but the industries essential for war? It seems clear that Japan must be allowed some exports; and the more the Japanese heavy industries are repressed the more she must turn to the light industries. One thing can most certainly be demanded, and that is that Japan, by her exporting methods, shall not again be allowed to debase standards of employment in other countries.

THE INTERNATIONAL CONFERENCE

17. The outcome of the forthcoming International Conference on Trade and Employment may greatly affect the future. Reduced duties, the abolition of quotas, etc., might lead to an increase in the proportion of world consumption of cotton goods met by international trade; while a limitation on the introduction of new protective measures might check encroachments of the kind that were so common between the wars. But no one can forecast with certainty what the practical results of the Conference will be, and there are many factors other than tariffs which will affect the volume of international trade in textiles generally, and the British share in particular.

18. Lancashire as an exporter of high quality goods would be likely to benefit more than most other exporters if world prosperity were maintained at a higher level than before the war. Lancashire would also be likely to obtain a relative advantage from tariff reductions on high quality goods going into markets such as the U.S.A. and India. On the other hand Lancashire might find in some markets (such as those mentioned in paragraph 12) that her preferential position was weakened.

19. The only certainty among all these uncertainties is that whatever the conditions in which Lancashire has to trade, the more efficient she makes herself the better will she be able to cope with them or profit from them.

CONCLUSIONS

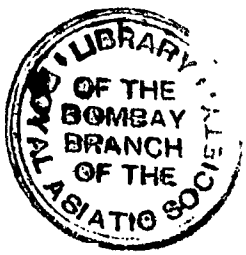
20. (1) Long-term demand in the home market is likely to be rather larger than before the war. The size of the increase will depend upon the general level of prosperity in the country and upon the effects of redistribution of income.

(2) The total volume of international trade in cotton textiles will depend upon (*a*) the general level of prosperity in the world, and (*b*) the policy of governments towards the protection of their local industries. Between the two world wars the volume of international trade in cotton textiles declined although world consumption increased, mainly on account of the encouragement given to local industries. The U.K., as the chief exporter of cotton goods, was particularly hard hit by these developments. Present indications are that many countries are planning to expand their own cotton industries or to establish new ones.

(3) The United Kingdom's share in total international trade in cotton textiles between the wars declined heavily, mainly on account of Japanese competition. Japanese competition cannot be assumed to have disappeared for ever and in any case many potentially dangerous competitors, e.g., India, China and Brazil, are developing their exports.

(4) Before the war U.K. trade in cotton goods was to an increasing extent concentrated upon markets in which they received preferential treatment. A more liberal regime of international trade would give U.K. exporters increased opportunities in some markets but might lead to a reduction in the preferences enjoyed in others.

(5) Whatever the long-term conditions of international trade, the U.K. industry's best hope of being able to cope with or profit from them is to make itself as efficient as possible.



Chapter IX

SCIENCE AND INDUSTRIAL PROGRESS*

1. This chapter is mainly concerned with " scientific research " (as later defined), but we have deliberately chosen a more comprehensive title because we wish at the outset to make clear our general conception of what should be the attitude of industry to science. Industry, if it is to take a lead in progress, must " get into gear " with science in a wide sense. Not only must it qualify itself to understand and apply the knowledge which scientists can provide, but it must be ready to use scientific method in dealing with its own practical problems. There is a danger to both sides in the tendency, somewhat prevalent just now, to look upon " research " as a kind of philosopher's stone for industry and upon scientists as a body of conjurors who can produce ready-made discoveries of immediate commercial value in industrial practice.

2. There is another kind of danger, too, which puts upon those who advocate—as we do—a closer linking of science with industry an obligation to make their purpose clear. As we see it, each side has its own honourable function which should be kept in view. Each can help and influence the other, but must guard against being distracted from its true function. In this report, since we are concerned primarily with the industrial and commercial side, we think it specially necessary to emphasise that, when we advocate a closer link between the two sides, our essential aim is that of making commerce and industry " science-minded," *not* of " commercialising " the pursuit of scientific knowledge.

3. In order to explain what is our broad interpretation of the idea of research and of the relations between industry and science we classify the matters with which we are concerned under three main headings :—

(*a*) *Fundamental research*
(the pursuit of scientific knowledge for its own sake).

(*b*) *Operational research*
(the use of scientific method in the study of practical industrial problems).

(*c*) *Applied research*
(the application of scientific knowledge to the improvement of industrial production or practice). This would broadly cover :—

(i) devising improved or new processes, new products or new qualities in existing products ;

(ii) solving particular technical problems as they may arise in day-to-day industrial operations ;

(iii) devising improvements in conditions affecting the health and general well-being of those working in the industry.

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* This chapter is based mainly on the reports and other data prepared by our Research Sub-Committee to whose members we have already expressed our acknowledgments (*see* Foreword). It contains, however, certain additional matter and for this, as also for the general wording and form of the chapter, the Working Party, as such, is responsible.

4. We do not put forward this list as a perfect logical classification. Moreover, in actual practice, the three classes of research may tend to merge into one another in the sense that a particular piece of work may involve all three classes. The different headings, however, indicate certain real distinctions of which account ought to be taken in organisational arrangements. Thus we regard headings (*a*) and (*c*) as covering those activities which are generally understood as "scientific research." Heading (*b*), however, may involve activities of an entirely different nature. No hard and fast line can be drawn and some of these latter activities may be appropriately handled by an organisation set up to deal with "scientific research." But it should not be taken for granted that this is automatically the right course for every kind of activity, merely because it involves studies which can be properly described as a form of "research," or because "scientific method" has to be used in diagnosing the problems with which it is concerned.

Operational Research

5. Following on the foregoing preliminary observations we must, in order to make this chapter complete, briefly indicate some of the activities which are important for the cotton industry and which we regard as forms of "operational research."

(i) Market research is one of them. In other parts of this Report we strongly advocate the application of scientific method to the study of market opportunities and consumer demand and to the relation of the results to the special production capacities of the Lancashire industry. We regard this as a distinct type of work for which a separate organisation should be created; but at the same time we consider that any such organisation should work in close contact with the industry's central institute for "scientific research," since there will be a constant need for exchange of ideas and knowledge between the two. The subject of market research has been dealt with in Chapter VII and is further covered by some of our recommendations.

(ii) Industrial and labour research represents another important class of work which we regard as a kind of operational research. We interpret this heading as including matters such as the psychological factors involved in different forms of employment within the industry, as well as all that wide range of subjects covered by the general expression "industrial relations." This is something different from the kinds of applied research which we intended to include under heading (*c*) (iii) in paragraph 2. It is a wide and important subject which we do not attempt to deal with in this chapter. We regard it as something distinct from "scientific research" as here interpreted, but again as a matter the study of which should be handled in close contact with the industry's central institute for "scientific research."

(iii) Apart from the two important subjects referred to above, there are many cases where "operational research" and applied scientific research overlap. We understand, for example, that one kind of work done by the Shirley Institute which has been found to be particularly valuable by the industry is the survey of machine operations (e.g., the work done by the Institute in connection with an examination of wages and work load in the weaving industry). This kind of case illustrates the need for close contact between the central institute and other kinds of research work as well as the difficulty of drawing a hard and fast line of demarcation for the activities of the former.

6. The foregoing observations have been a necessary introduction to this chapter, in the remainder of which we are concerned only with "scientific research" as previously defined, i.e., the matters covered by headings (*a*) and (*c*) in paragraph 2.

Characteristics and Conditions of the Cotton Industry

7. As a preliminary to considering " scientific research " in relation to the cotton textile industry it is useful to appreciate the industry's special characteristics. The textile industry (with others such as leather goods, agriculture, etc.) represents one of the traditional industries as distinguished from modern industries such as chemical manufacture, electrical engineering, radio, plastics, etc., which originated from known scientific principles which in turn had been previously discovered in the laboratory. An industry of the latter type is in truth applied science. Science came first and the industry later; if science is removed, then the entire industry disappears. The former, however, were originally domestic pursuits which became mechanised. Science came in after the practice was in commercial operation, first of all to provide the power for driving the machine, and then later still to explain the scientific principles underlying the existing practice and to contribute improvements.

8. This distinction accounts for the fact that the most notable contributions of industrial research can be seen in the modern industries, and also for the not uncommon statement that science has done little for the textile industry. Since textile production has in fact been built up as a craft, practised over countless generations, it would indeed have been surprising if modern science had upset the entire structure. Nevertheless, the method of trial and error, of empirical experimentation, has been slow and costly. It is only quite recently that the scientific principles on which the textile industry depends have been elucidated.

9. The distinction has a bearing too on the way in which research can be best approached. In the modern industries success has been impossible without an understanding of scientific principles. In the older industries such as textiles that has not been the case. This explains the commonly repeated statement that certain sections of the cotton trade have difficulty in understanding the reports of the Shirley Institute. The difficulty would in fact apply to any scientific publication, though it should be noted in passing that such criticism does not normally come from the finishing section of the industry, the processes of which are much more closely connected with science.

10. An examination of historical antecedents also helps to throw light on present problems. Looking back over the past, the one fundamental contribution from science which has been readily absorbed by the textile industry is power. Potential contributions in other respects have been slowly accepted; for example, attempts to put dyeing on a scientific basis about 1825 failed because the industry was using natural dyes of unknown constitution. Mercerising remained undeveloped for 50 years. Those examples illustrate two important facts. First, it is not possible to incorporate scientific principles in industrial practice until there has been created a body of organised knowledge relating theory with practice. The creation of such an organised body of knowledge is, incidentally, one of the important functions of research workers. Secondly, the need for applying new scientific knowledge was not urgent in the last century, because Britain had secured so great a lead over all other countries in industrial development. So long as manufactured goods could be sold at a profit in an expanding market there was little incentive for research into new products and new processes.

11. But these conditions have for a long time been changing and it is worth while for our present purpose to take account of the part that science has played in the process which has enabled other countries to gain on us.

12. German history has some important lessons. Germany was left behind in the Industrial Revolution and found herself unable to get a satisfactory foothold in world markets. Germany, however, was the first to realise the contribution that science could make to material prosperity. Bismarck founded organisations for the express purpose of applying science to industry so that, when the era of industrial science started at the beginning of the present century, Germany had the *men* ready for the purpose, even if the U.S.A. and the British Empire had the raw materials.

13. We have much to learn too from the U.S.A. The growth of industrial research in that country has been one of the features of the twentieth century. The 1914–18 war emphasised America's serious and critical lack of essential chemicals and the intensive growth of American industrial research started in 1920. Thus in 1900 there were 3–4,000 chemists in the U.S.A., in 1920 there were 297 industrial laboratories with 7,400 technical men (apart from academic posts); but in 1940 there were 70,000 chemists, physicists, engineers, etc., in 2,000 industrial laboratories. In addition there are now over 1,000 applications filed in Washington to build new laboratories or major extensions.

14. And how do we now stand? The easy competitive conditions of the last century led us to stake the whole livelihood of our expanding population on manufacture and trade. A very substantial part of that stake was put into the cotton textile industry. Now that conditions have changed, one of the greatest national questions is whether we can maintain the cotton textile industry as an important part of our source of livelihood. In fact, we face a great crisis in our textile history and, if we are to survive, we need a dynamic policy with respect to research, invention and development.

15. While the need for this is forced upon us by our national position, the available opportunities are such as in themselves to demand a new outlook. The systematic study of the raw materials of the textile industry only started about 25 years ago, and is one in which British science has played a very distinguished part. The constitution and structure of the fibres have been elucidated and it is now possible to interpret their behaviour in terms of that structure. Hence, the chemical technology of fibres has entered upon an important phase of development which should result in many new processes; with the fundamental knowledge now available we stand at the door of a new epoch of textile science, and the production of truly synthetic fibres indicates future possibilities.

16. While from the standpoint of textile science this has brought about a comprehensive unification of outlook so that the various fibres are no longer regarded as absolutely distinct and different, the development of artificial fibres has also important practical reactions on the industrial position.

(*a*) Firstly, it means that the spinners and weavers are in effect getting into the position of being sandwiched between two forces of science—an essentially chemical industry at one end making the raw material and, at the other end, a chemical industry making the finishing materials. Will the scientific industries at each end be content to accept the traditional methods of spinning and weaving? There is evidence to the contrary.

(*b*) There is a second and still more significant practical aspect of the new conditions. The "scientific" industries at each end are concerned with the whole field of textile industry which in the past was dependent on four main

natural fibres—cotton, wool, flax and silk. The new fibres can be used as supplementary or as alternative to all four. The four separate old textile industries must, if they are to be progressive, make use of the new material and accordingly introduce spinning and weaving methods adapted to it. To a large extent the new problems arising will be common to all four, and the new scientific knowledge will cut across all their dividing lines. In fact therefore, in the hitherto sectionalised field of textile industries, a new integrating force has arisen from the production of artificial fibres and this change in conditions necessitates a new outlook and a change in the old order.

17. The foregoing brief introductory survey brings out the following important points :—

(*a*) The need for a widely interpreted reciprocal relation between science and industry.

(*b*) The importance of having enough men of high ability trained to do the necessary scientific work.

(*c*) The impossibility for science to make its true contribution to industrial progress unless :

(i) research workers create an organised body of knowledge relating scientific theory with industrial practice.

(ii) industry, on its side, has enough men in high positions who are capable of understanding scientific principles.

(*d*) The critical nature of the present moment when, if the textile industry is to make anything like its former contribution to the national economy, it is absolutely essential that it should take the lead in scientific progress in its methods of operation.

(*e*) The great opportunity of the present moment when we may be at the gates of another advance in regard to textiles as spectacular as the Industrial Revolution itself, and the need for ensuring that old traditions and old prejudices do not bar the way.

(*f*) The emergence of a new integrating force through the development of new fibres which should bring together the hitherto sectionalised textile industries (cotton, wool, linen, silk) for the study of joint problems.

(*g*) The fact that the old traditional craft industries of spinning and weaving are now sandwiched between two " scientific " industries of fibre manufacture and of finishing, each of which has links with textiles other than cotton.

18. It is in the light of these needs and opportunities that we have to consider the steps needed to ensure that scientific method and knowledge are used to enable the cotton textile industry to meet its needs and take advantage of its opportunities.

19. We have to consider :—

(*a*) The proper functioning of the main instruments of research, and

(*b*) The steps required to ensure that industry on its side is ready to extract the full value from the results of (*a*).

Under (*a*), there are four main heads to be considered :—

(i) The universities and technical colleges ;

(ii) The trade research associations ;

(iii) The research activities of individual firms ;

(iv) The work of consultants and private investigators.

20. Starting from the above, we have to ask the following questions in regard both to the textile industry and the textile machinery industry :—

(*a*) What is the extent and scope of the research work being carried on ?

(*b*) Has the textile industry in the past failed to take full advantage of the available scientific resources and, if so, what is the reason ?

(*c*) What can be done to ensure that the cotton textile industry is in a position to make full use of all relevant scientific and technical information ?

(*d*) What are the prospects for long-distance technical development and to what points should intensive attention be directed ?

Extent and Scope of Research Work

21. We proceed, therefore, to review the present extent and scope of research work being carried out within the cotton textile industry and, as an introduction to this, it may be useful to give some practical examples of benefits which have, in fact, accrued to the textile industries through the operation of scientific research during the past 25 years. The following list is selected from a large number of instances and is intended to be illustrative rather than exhaustive evidence of the benefits of research :—

(i) The chemical constitution and molecular structure of the textile fibres have been largely elucidated, and it is now possible to explain most aspects of fibre behaviour, and fibre degradation in use, on the basis of this structure.

(ii) Regenerated fibres have been produced and developed from a variety of existing raw materials of vegetable and animal origin.

(iii) Synthetic fibres have been produced.

(iv) A considerable amount of work has been done on many of the fundamental properties of the various fibres, such as dimensional characteristics, tensile strength, elastic properties, and moisture relations ; in many cases, these data have been correlated for different fibres and some important conclusions have been reached. These accurate and comparative data were of great value to the designer of functional fabrics for war-time use, and now form part of the armoury of the textile technologist in times of peace.

(v) A close analytical study of the nature and causes of variability in yarns and intermediate products has been made and is now direc ted towards the development of far-reaching changes in processing technique.

(vi) Various systems of high-draft spinning have been introduced, resulting in a substantial reduction in the number of operations in the spinning mill.

(vii) The development of special methods for spinning small quantities of fibres has greatly increased the speed with which promising new ideas can be tested and brought into production.

(viii) Interesting and important work has been done on the relation between fibre properties and yarn properties ; this has been of great benefit not only to the spinner but also to the producer of fibres, both natural and artificial.

(ix) There is now a more scientific approach to the question of fabric structure which has led to substantial advances in constructing cloths for specific purposes, and the textile designer is thus able to undertake his task in a more rational manner.

(x) The bleaching of cotton and rayon materials has been brought under scientific control and useful tests of degradation have been established.

(xi) The nature of wetting and detergency have been elucidated with great benefit to the " wet-end " of the textile industry.

(xii) Fundamental work on drying has improved the quality of textile goods and new machines with improved controls are now being made.

(xiii) Numerous new dyestuffs have been produced and the whole standard of fastness has been improved ; in addition, most valuable and far-reaching work has been done on the theory of dyeing.

(xiv) Similar remarks apply to printing.

(xv) Numerous inventions of great value have appeared in the realm of textile finishing ; these include the following :—

(*a*) Crease-resisting process,
(*b*) Non-felting wool,
(*c*) Anti-shrink cotton,
(*d*) Permanent water-repellency,
(*e*) Coated fabrics,
(*f*) Bonded fabrics,
(*g*) Moth-proofing,
(*h*) Rot-proofing.

in addition to a great range of pattern effects.

(xvi) Many new tests, both physical and chemical, have been devised to cover the whole range of textile production ; some of the older and rather empirical tests have been improved in the light of our modern understanding of the molecular structure of textile fibres. On another basis, studies of the physiological effects of various types of clothing have had an important bearing on the design of yarn, fabric, and garment for various purposes.

(xvii) In addition to the above concrete examples of the application of science in the textile industry, there is evidence that the contacts between scientists and industrialists are beginning to create a new outlook which is making its presence felt in such ways as an over-all improvement in efficiency and quality of production following on a number of surveys in the different sections of the industry and the development of statistical methods of analysis and control.

22. The developments recorded in the last paragraph have been international in character and contributed by scientists in many countries. The share of British scientists in this work has in the past been a notable one ; but we must emphasise as strongly as possible that, in view of the rapid increase in scientific effort and in higher education throughout the world, special efforts are now required for encouraging and fostering research activities in this country if the British position is to be maintained in the face of the intense industrial competition which we must now expect.

Present Extent and Scope of Research

23. It is clear that, since science knows no frontiers, research within the cotton industry must benefit very considerably by discoveries in other fields of inquiry, often apparently far removed from the immediate concern of the cotton industry itself. In this section, however, we are concerned only with the extent and scope of the research effort which is being pursued actually within the cotton textile industry, and we, therefore, exclude from our con-

sideration the organisation of research within certain ancillary industries. Amongst these the dyestuffs industry occupies a place of special importance, and its contribution to the progress of the cotton industry has been noteworthy. It is clear that the maintenance of the close connection between the dyestuffs manufacturers and the finishing section of the cotton industry is essential for future progress, and that it is important to maintain in this country a strong and progressive dyestuffs industry capable of meeting the present and future needs of all the branches of the textile industry.

24. Within the cotton industry itself,* including in this connection the textile machinery industry, the chief centres of research are at present: (1) the Shirley Institute of the British Cotton Industry Research Association, and (2) the research departments belonging to certain of the groups and large individual firms.

25. It should be noted, too, that a trade research association is now to be set up by the rayon industry. In this connection we think it important to record that the British Rayon Federation has made it quite clear that it does not regard the existence of a central rayon research institute as in any way absolving individual firms from maintaining their own internal research organisations. Rather does it regard a central organisation as being supplementary to the work of private firms, which will, it is hoped, extend and intensify their private research activities as circumstances permit. We endorse these views and regard them as being equally applicable to the cotton industry.

26. The last mentioned development is of particular interest, since, as emphasised in the introductory paragraphs to this chapter, modern develops ments in the use of fibres are breaking down the watertight compartment-into which the textile industries have tended to be divided in the past. It is clear that in the future the Lancashire weaving industry will be increasingly concerned with fibres other than cotton and with mixtures of cotton and other fibres. It is essential, therefore, that on the research side close co-ordination should be attained between all the research activities which are concerned with investigation of textile fibres, whether natural fibres such as cotton, wool, silk and flax or rayon or other artificial fibres, so that immediate advantage can be taken throughout the textile field of advance made in any one section.

The Main Direction of Research Effort

27. The Shirley Institute† has a staff of 363, of whom 76 are university graduates, and has now under consideration an expansion programme which will necessitate additional staff estimated to include 40 to 50 trained graduates, about 40 technologists and about 100 other employees. Of the 76 graduates referred to above 70 are engaged full time on research. The time of these graduates is equally divided between applied work and fundamental research, but, as is to be expected, the expenditure of money on the applied work considerably exceeds that on fundamental research. The expenditure of the Shirley Institute is at present about £140,000 per annum, but this sum will be substantially increased if the expansion referred to above comes into operation. We have been informed that most of the development work now being carried out at the Shirley Institute is in the machinery and mechanical field. Development is understood to mean the carrying through of ideas in applied research to the point of full commercial exploitation, the last stage involving close co-operation with industrial concerns.

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* The work of the universities is dealt with separately in paragraph 45.

† We wish to make it clear that we have not attempted to give a full enumeration of the tasks accomplished by the Shirley Institute. We are concerned in this chapter with the broad relations between science and industry.

28. It appears from our enquiries that research within the industry, with certain notable exceptions, is directed mainly towards the refinement and improvement of existing machines and processes rather than to the discovery or invention of fundamentally different ones. This does not apply in the same degree to the finishing section, perhaps because, as already noted, the day-to-day operations in that section are more nearly scientific than technological.

29. Another factor which no doubt contributes to the comparative success of the research effort of the finishing section is the fact that, owing to its position in the organisation of the cotton trade, i.e., its close association with the selling section, it has a clearer appreciation of possibilities with regard to novel effects. This is borne out by the fact that some firms whose organisation approximates more nearly to the vertical than is usual in the very highly specialised structure of the British cotton industry have been conspicuously successful in new developments based on scientific research.

30. In order to get some idea as to the extent of research effort being undertaken by the individual firms in the industry, a questionnaire was issued to cotton textile firms and manufacturers of ancillary products and machinery. 2,200 copies were circulated. Firms were not called upon to reply if they did not undertake research. Only 242 replies were received, and, although " nil " returns were not asked for, 52 were received. Of the 190 effective replies, 65 indicated merely that the concern was a member of the British Cotton Industry Research Association. Only 108 firms in the spinning, weaving and finishing sections of the industry indicated that they employed science graduates either on the management side or engaged in research. These 108 firms have 70,000 employees, and the total number of science graduates involved was 259 of whom only 86 were reported as engaged full-time on research. Five returns came from textile machinery makers (total employees 1,005, total number of science graduates 12, number of graduates engaged on full-time research 4.)

31. These returns are far from reassuring even when full allowance is made for the effects of war-time restrictions on research departments in the textile industry. When it is remembered that the firms stating they employed graduates involve only some 70,000 employees and that the total labour force in the spinning, weaving and finishing sections of the cotton industry was before the war over 400,000, it is clear from the results of the questionnaire that the employment of graduates both in management and in research over the cotton textile industry as a whole is of negligible proportions. It must be noted, too, with regret that there are still firms hostile to the idea that higher education in general and higher scientific education in particular are of value in business.

Relations with the Textile Machinery Industry

32. Our broad impression is that there is a clear need for more effort in regard to the perfection of the design of the machinery and the development of new methods of processing. The Shirley Institute has much work on hand in this direction ; but, fully as we appreciate the value of what they are doing, we consider that a much greater part should be played by individual firms both in the textile industry and the textile machinery industry.

33. As regards the latter, a situation which we can only regard as extremely unfortunate for both industries has existed in the past. Until very recently the makers of textile machinery had not been admitted to full membership of the British Cotton Industry Research Association and this fact undoubtedly militated against full co-operation between the two sides. It is unnecessary for the purpose of this chapter to examine the reasons for this position nor do

we wish to make it a ground for criticism of either side. We are on the contrary glad to record the change which has now been made and the hope that benefit will result from it.

34. We must, however, at the same time record our very strong view that admittance to membership of a central research association should in no way be regarded as absolving individual firms in the textile machinery industry from maintaining their own research organisations or as justifying any relaxation or contraction of their research work. We not only endorse the general principles on these matters as stated by the Rayon Federation (see paragraph 25), but we must state our impression that in the particular case of the textile machinery makers there is a great need for increasing the scope of their research activities.*

35. In this connection we wish specially to emphasise the importance of the relations between the textile machinery industry and the research centres concerned with fundamental physical investigations into the properties of fibres. Such investigations fall within the province of university and central laboratories (such as that of the Shirley Institute). Whether such investigations should also be undertaken in their own laboratories by the textile machinery industry is a question on which there may be different opinions, though for our part we consider the textile machinery industry, if it is to be really progressive, should itself do work on these fundamental questions. But whatever view may be held as to this it is vitally important that there should be the closest possible collaboration between the textile machinery industry and the centres of fundamental research, and that the former should take an active interest in what is being done by the latter. It is not sufficient that the textile machinery industry should sit passively waiting for ideas on the physical properties of fibres to be passed on to it by the fundamental research centres. It should have a contribution of its own to make to these studies. Above all it should have in its own employ a sufficient number of high quality physicists to be able to understand the significance of fundamental discoveries so as to ensure that they are utilised and developed in designing textile machinery.

36. The views recorded in the preceding paragraph must be considered in connection with the general concern which we feel as to the position of the textile machinery industry. We have referred to this in Chapter VI, and Part II of this Report contains recommendations for some special enquiries. In the present chapter it suffices to record the view that in the past too much of the invention and development of new types of machinery has been left to foreign firms. Possibly in the case of certain countries (e.g., U.S.A.) this has been stimulated by conditions which made a high degree of mechanisation to save labour a more urgent necessity than it has hitherto been in this country. Now, however, with our altered labour situation, and in view of the rapid development in the use of rayon and rayon staple in Lancashire, conditions have changed altogether, and there is a new need for intensive effort on the part of the British manufacturers of machinery.

Liaison between Centres of Research Activity

37. Problems raised under this heading form one of the main difficulties in the organisation of research within an industry which comprises a large

* Although it was not part of our terms of reference to examine the position of the British textile machinery industry, the ability of that industry to meet the needs of a progressive British textile industry is a factor so vitally affecting the prospects of the latter, that it was necessary to extend our enquiries to cover that point. The point has been dealt with more fully in Chapter VI.

number of firms, some large and some small, and for which a centralised research institute in the form of a trade research association has been created.

38. Those firms which spend large sums on their own research organisations inevitably have strong commercial reasons for keeping certain of their activities to themselves, at least until they have reached the stage at which protection by patent is possible. In some cases where patent protection is regarded as impracticable the process or technique may be kept secret as long as possible. In these circumstances the central research association has to remain out of touch with some of the work which is in progress in the industry. With the present organisation of industry this must be accepted as inevitable, and as reflecting the different scope and outlook of the central research institute and the laboratories of the individual firms. We believe, however, that much can be done when there is good will on both sides to obviate the major disadvantages and to obtain the benefit of full co-operation between the central institute and other laboratories particularly in fundamental scientific problems of interest to the industry as a whole.

39. The smaller firms are frequently in a less favourable position to take advantage of scientific work done by a central research institute in the early stages of a new development, because they often lack the scientific staff requisite to appreciate and understand technical and scientific reports and to incorporate into practice new ideas.

40. Active steps are being taken by the Shirley Institute to aid the smaller firms in this direction and in later paragraphs we make certain recommendations on this matter. We regard it of the utmost importance in this connection that a much larger number of graduates should be employed in the cotton textile industry on the managerial and production sides as well as in research, so that new ideas can be quickly appreciated at these levels and effectively put into operation. This presents less difficulty in the larger organisations and may be one of the ways in which advantages would follow the creation of larger units in the producing sections of the industry.

41. Another matter which we considered in connection with the scientific approach to industry was that of collaboration between the makers of textile machinery and the users. We have dealt with this more fully in Chapter VI. For our present purpose it suffices to record our strong view that closer co-ordination between all sections is both possible and most desirable in connection with the development of new types of machinery, and that on the research side we welcome the prospect of close co-operation in the future between the Shirley Institute and the makers of textile machinery which will be possible now that the latter are admitted to full membership.

Long Distance Prospects of Technical Development

42. We instituted enquiries concerning possible long distance prospects of research developments which might involve technical changes of such importance as to influence our recommendations concerning the main strategy of re-equipment. We examined the position as regards a number of particular projects and record the following general impressions :—

(*a*) There are in the field designs for several types of accessory machinery which might have a quite substantial effect on labour requirements.

Some of these ideas have reached the prototype model stage but in most cases it is expected that several years will be required before they are commercially developed.

One important question is whether the existing facilities are adequate for testing out new ideas of this kind, i.e., facilities for making either prototypes or a preliminary batch of production models for commercial trials.

(*b*) The development of new fibres has possibilities which require the intensive and constant attention of the designers of textile machinery.

(*c*) As a broad generalisation it appears reasonable to expect very considerable changes in the next decade.

43. In summarising the trend of development, an expert scientific witness stated that, in view of possible developments in the next few years, it would, in his opinion, be unwise for the cotton industry to undertake wholesale replacement at this stage of existing machinery by new machinery not very different in principle. This does not, of course, mean that the industry should stand still, adopting a " wait and see " attitude. That would be disastrous. As stated elsewhere, our view is that there is a pressing need for a substantial measure of re-equipment and that a start should be made on a programme for this without delay.

44. Liaison between the various research groups in the cotton textile industry can be very materially aided by the professional and scientific organisations, such as the Textile Institute and the Society of Dyers and Colourists, which hold meetings for discussion on scientific and professional questions, in the course of which there is much exchange of information and of ideas. These societies also disseminate scientific information through open publication. We feel that the work of these societies should be encouraged and assisted by the cotton industry. We hope too that the newly formed Manchester Joint Research Council may develop in such a way as to be of real assistance to the cotton industry. Such facilities as it is able to provide should be utilised to the full along with those of the professional institutions and scientific societies, particularly in the direction of making surveys and reviews of textile knowledge and of organising conferences on textile problems from which suggestions for further investigations may emerge.

Universities, Technical Colleges and Training

45. The universities and technical colleges of university rank occupy a special position in the organisation of research for industry inasmuch as they perform the two functions of giving training in fundamental science, and of carrying out in the various scientific departments unfettered academic research. It is their duty to train in research methods the men who will later on occupy research posts in industry. The position of the universities is, therefore, a basic one, and it is in our view a matter for serious concern that in this country the proportion of the population which receives university training is falling far behind that of other industrial countries. We regard it as essential that every endeavour should be made to enable the universities to train a larger number of students. At present the demand for trained graduates for the cotton textile and textile machinery industries including the research institutions is considerably greater than the supply, and that demand is likely to grow. We have endeavoured to make some estimate of the requirements of graduates in textile technology for the next five years, and although an exact figure is difficult to estimate, it seems likely that at least 30 per annum will be required. As to graduates in pure science it seems reasonable to expect that in the immediate future the cotton textile industry will absorb a similar number. Furthermore, the Shirley Institute is likely to require additional staff over the

next five years at the rate of 15–20 graduates in science and about half that number in technology per annum. These figures are, of course, exclusive of the requirements for works chemists in the textile industry and of the larger requirements for both research and works chemists in related industries such as dyestuffs manufacture.

46. In connection with the employment of scientific graduates in the cotton textile industry we feel it necessary to call attention to one feature which in the past has caused disappointment, and which must be remedied if the industry is to realise the full value of the contribution which science in the broadest sense can make to it. There has been a tendency for firms which recruit trained scientists to regard them merely as experts who are to be confined to rendering a limited subsidiary service. The industry, however, will not absorb the value of scientific method nor be able to appreciate the commercial value of new scientific ideas if all their trained scientific employees are confined to this role, while, on the other hand, such a limited conception must affect the attractions of a scientific education to young men who are considering a career. It is, therefore, extremely important that firms which employ research staff should so arrange their organisations that members of this staff should be given an opportunity to show whether they possess the qualities required on the administrative side and a chance of being selected for management or directorship. In fact the prospects of an attractive career later in life either in research, production or administration should be open to all duly qualified entrants to the research laboratories whose work for the employing firm is successful.

47. We have given consideration to the question of the type of training most suitable for those graduates who wish to enter the cotton textile industry, and we are of the opinion that in the future graduate entrants should comprise both textile technologists, including graduates with special post-graduate training in textile technology and textile science, and graduates with specialised research training in the fundamental sciences of physics and chemistry as well as in engineering. The research laboratories may require also a number of graduates with special training on the biological side.

48. There is one point about scientific research work at the universities which we feel it necessary to emphasise very strongly—this is that the universities must maintain complete freedom as to the scope and direction of fundamental research work carried out in their laboratories. Unless research work of this kind is spontaneous and unfettered, and its results open for full and free discussion, the progress of scientific discovery will be retarded and hindered. This does not, of course, mean that the universities should maintain an isolationist attitude to industry. On the contrary, since they hold a central position both in research for new knowledge and in the dissemination of knowledge already gained, it is important that close contact should be maintained between them and industry for their mutual advantage. This can be achieved by personal contacts for discussion and exchange of information, and by participation in various university activities by research staffs of the industrial laboratories; as, for example, in meetings, discussions and symposia organised by the university, and through university post-graduate and refresher courses. Since the post-graduate training in research of those who may later be attracted to posts in the cotton textile industry is undertaken in the science departments of the universities, we feel that the cotton industry should encourage and assist the prosecution of spontaneous and unrestricted research in those departments.

49. We have hitherto not referred specifically to any particular university in this connection, since at any given time spontaneous research work which may become of vital importance in industry may originate in any one of the universities and university colleges. As an example may be cited the work

carried out in British universities on the structure of carbohydrates as the result of which our knowledge of the structure of the fundamental materials used in the cotton industry, and in other industries, has been revolutionised. The local universities have, however, a lengthy tradition of fundamental research work in problems cognate to the surrounding industrial life, and we have noted that at the present moment fundamental scientific work on materials of interest to the cotton and rayon industry is being developed in the laboratories of Manchester University for open publication. Fundamental work is in progress also at the Faculty of Technology of the University situated at the College of Technology. We are definitely of the opinion that a strong school of textile technology and textile science should be maintained there and that it should be assisted and encouraged in every possible way to undertake both the training of graduates and the carrying out of fundamental research work in the various branches of textile science.

Achievements of Individual Firms

50. No discussion on research work in the Lancashire cotton industry would be complete without paying a very high tribute to the work of past and present scientists in the laboratories of some of the industrial firms. Because of the necessary secrecy imposed by most firms, these scientists do not receive the same opportunities for public recognition as the workers in the laboratories of the universities and trade research associations. The function of the industry is not to advance science but to manufacture and sell textile goods ; the scientist is there for the benefit of the industry and not the industry for the benefit of science. Nevertheless, the high standards of quality of British textiles, the production of textiles embodying revolutionary new properties, and improvements in the old, are concrete and tangible evidence of what has been done.

51. The textile industry itself is a monument to British inventiveness and skill ; it must not become a tombstone. If at a time when fundamental properties were largely unknown and theories of fibre structure non-existent, so many advances were made by so few scientists and technologists, how much more can be done in the future with our present wealth of knowledge on a sound foundation ?

CONCLUSIONS

52. From a practical point of view the needs can be considered under three main headings.

(*a*) *The supply of qualified men** :

How to train men for the scientific research work required by the industry ; how to ensure that the cotton industry obtains its fair share of the best scientific brains ; and how to ensure that it employs and uses rightly enough trained scientists to appreciate the significance of scientific developments in relation to industrial practice.

(*b*) *The co-ordination of the various scientific research activities which have a bearing on the industry*

This covers the relations between the universities or central research institutes and the research work of individual firms.

(*c*) *The application of scientific knowledge in industrial practice*

THE SUPPLY OF QUALIFIED MEN

53. (i) The starting point must be the universities and technical colleges, which have the function of training in research methods those who will ultimately enter research laboratories in the industry.

* The term "men" in this and all similar contexts includes, of course, women.

The cotton textile industry should encourage and assist financially and otherwise the maintenance, in universities and other teaching institutions of university rank, of strong and active research schools dealing with textile science and textile technology and the fundamental scientific background of the textile industries.

In these institutions research work should be pursued in complete freedom.

The training of undergraduate and post-graduate students should be undertaken and the appropriate research schools should accept selected science graduates from other schools of science and train them in textile research for periods of one to three years.

Every encouragement should be given to firms in the industry to make contact with such institutions for their mutual benefit.

(ii) The work of the professional institutions and scientific societies should be encouraged and assisted; particularly in making surveys and reviews of textile knowledge and organising symposia for the discussion of textile problems from which suggestions for further investigations may emerge.

(iii) Consideration should be given to the establishment of industrial research fellowships and associateships, the holders of which would be available to individual firms in the industry for investigating specific problems. A sketch of a possible plan for such fellowships is contained in our final recommendations.

(iv) Firms should make every endeavour to encourage and permit the publication of original research work in scientific journals. It would also be a great encouragement to the industrial research worker if the universities were prepared, in the award of their higher degrees, to give wider recognition than at present to work done outside the university walls by their own graduates.

(v) It is suggested that the Ministry of Labour should regard genuine training within the universities in textile science and related branches of pure science as a form of national service and relax the present restrictions which operate to the grave detriment of our greatest industry.

Development and Co-ordination of Scientific Research Activities within the Industry

54. (i) In view of the unification of textile science brought about by scientific progress during the past 25 years there is a clear need for a co-ordinating body. Such a body might be a Textile Research Advisory Council covering the entire field of textiles. Such a council could act in an advisory capacity to review, expand and co-ordinate research and development throughout the textile industries. More detailed proposals for such a council are contained in our final recommendations.

(ii) The existing (and foreshadowed) trade research associations for the textile industry have important functions to perform as central research institutes. These functions differ from those of research departments of individual firms within the industry. The precise nature and scope of the functions of the former, how they can be best exercised, by what means their exercise can be made of the fullest possible value to the industry, and how they should be correlated with the functions of the research departments of individual firms are questions of a significance which affects trade research associations in all industries. We suggest that they are questions to which the right answers are not yet clear and that it will be useful to review the experience of the whole movement of Joint Research Associations started at the end of the 1914–18 war under the Department of Scientific and Industrial Research. We hope that the Committee recently appointed by the Lord President of the

Council may throw some light on these questions. So far as the textile industry is concerned we believe that the correlation between the work of the central research institutions and the work of individual firms would be facilitated by the operation of the proposed Textile Research Advisory Council.

(iii) We consider that, in order to maintain the position of the British textile industries and meet future competition, primary needs in relation to research for the textile industries are :—

(*a*) A great increase in the total research effort of the industry by active participation in research on the part of a larger number of individual firms.

(*b*) Closer co-ordination of research effort between the different sections of the industry in the drive for new developments.

Every individual firm which is large enough should establish a research unit for the investigation of its own ideas and the development of new processes and new products. Ingenuity and enterprise should be directed towards new inventions.

THE APPLICATION OF SCIENTIFIC KNOWLEDGE IN INDUSTRIAL PRACTICE

55. (i) There is a clear need for better, and in particular speedier, methods of translating research results to large scale production. How to achieve this is one of the most important practical questions of the present time. It deserves concentrated attention in all industries. Perhaps the most important single measure would be to increase the proportion of men with good scientific training in the employment of industry. The industry must learn how to use such men rightly. They should not be regarded only as specialists. As stated in an earlier paragraph, they should be given opportunities of advancement to the highest administrative posts if their general qualifications are suitable. (There will, of course, always remain the need for men who will remain specialists and make their whole career on the research side.)

(ii) The wider dissemination and more intensive application of results could be furthered by the more frequent use of one-day or several-day conferences organised by the Shirley Institute, the Textile Institute, the Society of Dyers and Colourists or by other learned societies at which representatives from within the industry would be invited to hear of the latest trends of scientific thought and technical development and to submit problems and questions. Such conferences might be arranged for different classes of people at different times, e.g., directors, managers, foremen.

This suggestion again brings us back to the point already made. To be fully effective such dissemination calls for a much larger number of graduates engaged within the industry, both amongst directors and staff, so that the implications of research may be adequately understood. This can be readily implemented in the larger firms, but there are clearly difficulties in the case of the small firms. It seems probable that considerable benefits would arise in this direction from a greater degree of integration or grouping together of the smaller firms.

Chapter X

INDUSTRIAL AND TRADE ORGANISATIONS

1. GENERAL STRUCTURE

1. The two main characteristics of trade organisation in Lancashire, among both employers and employed, are its craft or process basis, and the large measure of independence which has been retained by the local units. In this field, as in some others, the Lancashire textile industry still reflects the conditions under which it grew from the hand production of towns and villages more widely separated by transport difficulties than by actual distance. Local associations of cotton spinners and weavers were among the earliest trade unions to be formed in this country, and were closely followed by local associations of master spinners and manufacturers. Except in finishing, the organisation of those employed in the industry has continued on a craft basis, although the development of collective bargaining has brought into existence central amalgamations of the principal craft unions, balanced by central employers' organisations.

2. An expanding industry, such as Lancashire had up to 1914, has comparatively little need of policy-making bodies. Most of the organisations which were in existence before the first world war were primarily concerned, in the producing sections, with wage rates, hours and working conditions. Questions affecting the distribution or treatment of Lancashire goods in overseas markets were generally handled by the Manchester Chamber of Commerce, the character of whose membership had become largely mercantile, in keeping with the transformation of Manchester itself from an active spinning and weaving centre to an exchange and distributing centre. Many producers were members of the Manchester Chamber or of their local chambers of commerce, but their normal channels of expression were the district or central organisations of the sections to which they belonged. The long history and accumulated experience of the Manchester Chamber enabled it to speak with authority on many matters of general concern to the industry, but it was not until the formation of the Joint Committee of Cotton Trade Organisations in 1925 that all sections were brought together in a body whose specific function was to deal with the interests of the industry as a whole.

3. Apart from organisations of the type mentioned above, there were numerous associations of managers and other textile mill officials, whose field was mainly the exchange of technical information (though some of these societies were also concerned with the status of their members, or administered insurance benefits). Before reviewing present tendencies among Lancashire trade associations we describe below, in broad outline, the existing sectional machinery.

2. SECTIONAL ORGANISATION

A. Spinning and Weaving

4. It is convenient to deal with these two sections under one heading, not only because the main features of their organisation are almost identical, but also because some of the organisations in each section overlap into the other. In order to overcome the difficulties created by such overlaps arrangements have been made on the employers' side for joint consultation for certain purposes between the two principal associations; on the operatives' side the United Textile Factory Workers' Association, which covers both spinning and weaving, acts as a co-ordinating body.

5. In spinning, the principal organisation on the employers' side is the Federation of Master Cotton Spinners' Associations, Ltd., with about 300 members organised in 11 local associations. The membership represents about 75 per cent. of the spinning capacity* of the industry, about 28,000 looms and approximately 50 per cent. of the doubling capacity. Members of the General Committee and Executive Committe of the Federation are elected by the local associations in proportion to the amount of machinery represented by each association. Negotiations with labour, which were the original purpose of the Federation, are still its main function, together with the administration of a Workmen's Compensation Insurance Scheme for its members. It has, however, always taken a considerable interest in questions of general policy, and was largely instrumental in forming the International Federation of Cotton Spinners' and Manufacturers' Associations in 1904. The International Federation offers what is probably the earliest recorded example of joint action by producers of many different nationalities; it owes its existence to a concerted short-time movement, organised on the initiative of the English Federation, to combat an attempt to corner raw cotton. Both the English and the International Federations have done much to foster improvements in the quality, grading and packing of the raw material.

6. Until very recently the doublers had no organisation of their own. Firms owning about one-half of the doubling spindles were members of the Federation of Master Cotton Spinners' Associations, but the Federation could not claim to speak for the doubling industry as such. A new Cotton Yarn Doublers' Association has recently been set up with the support of doublers owning about 90 per cent. of the total doubling spindles installed.

7. In weaving, the Cotton Spinners' and Manufacturers' Association covers some 330,000 looms—nearly two-thirds of the looms in the industry—together with 2,300,000 spindles. For the most part the spindles belong to firms who also own looms, but a few firms who are spinners only are members of local associations. Strictly speaking, the Association is a federation of 23 local associations; individual firms do not become members of the central association. Like the Master Spinners' Federation, it was for long concerned almost entirely with labour questions, but as direct contacts between the Government and the industry have extended, so too have the activities of the Association.

8. As mentioned above, the trade unions in the spinning and weaving sections are not only amalgamated on a craft basis but, for the purpose of dealing with matters of general interest, are also federated in the United Textile Factory Workers' Association. Each Union or Amalgamation retains complete autonomy within its own sphere but the U.T.F.W.A. acts as a focusing point for opinion and as a channel for discussions with the Government and with other bodies in the industry on political and economic problems, other than those involved in industrial negotiations. There have been many attempts to bring about a greater degree of centralisation in the trade union structure of the industry, but so far it has not been possible to do more than establish about half a dozen amalgamations representing the principal crafts. As recently as 1937 it was estimated that there were about 200 separate unions in the cotton industry, almost all of them in the spinning and weaving sections.

9. Operatives employed on the principal processes in the spinning section are covered by the Amalgamated Association of Operative Cotton Spinners and Twiners and the Amalgamated Association of Card, Blowing and Ring

* The Lancashire Cotton Corporation, the largest amalgamation in the spinning section, is not a member of the Federation although it co-operates with the Federation in many matters.

Room Operatives. The Cardroom Amalgamation represents operatives engaged in the earlier processes for both mule and ring spinning, and also those employed in the spinning rooms of ring mills. The Spinners' Amalgamation is exclusively concerned with mule spinning and doubling; its membership includes the mule minders and their assistants, the piecers. Women and girls predominate in the Cardroom Amalgamation, while mule spinning is almost entirely confined to men and youths.

10. Operatives engaged in weaving and its ancillary processes are represented by several separate craft unions or amalgamations. The Amalgamated Weavers' Association, whose membership includes both men and women, is primarily concerned with the actual weaving process, but in some districts it represents operatives in other processes. The General Union of Associations of Loom Overlookers covers the men who are responsible for the setting and correct running of looms; the Amalgamated Textile Warehousemen represents the cloth lookers and other workers who examine the cloth when woven or handle yarn supplies for the loom. Winders, reelers and warpers are frequently members of the Weavers' Unions, but there are separate, highly specialised unions and amalgamations for such occupations as ball warping, tape-sizing, beaming, twisting and drawing, and warp dressing (for coloured cloths). Nearly all unions and amalgamations in the weaving section act together for purposes affecting the section as a whole through the Northern Counties Textile Trades Federation.

B. Finishing and Packing

11. On the employers' side, no single organisation exists which can speak for the finishing section as a whole on all questions. The Allied Association of Bleachers, Dyers, Printers and Finishers is responsible for all labour negotiations but does not deal with questions of commercial or general policy. It consists of five separate trade associations, together with the Bradford Dyers' Association Ltd. (in respect of the latter Association's Yorkshire branches). Three of the trade associations represented on the Allied Association (the Employers' Federation of Bleachers, the Employers' Federation of Dyers and Finishers and the Yorkshire Master Dyers' Committee) are themselves restricted to negotiations on labour matters; the other two (the Employers' Federation of Cotton Yarn Bleachers, Dyers and Sizers and the Federation of Calico Printers) deal also with wider matters of trade policy. In the bleaching section the Bleaching Trade Advisory Board deals with general problems; in piece dyeing there are some ten different associations, of which the Association of Piece Dyers and the Finishers' Association are the longest established. Three of the associations are concerned with rayon. We understand that a co-ordinating body for the piece-dyeing section as a whole is in an advanced stage of preparation.

12. The pattern of operatives' organisation in the finishing section is in strong contrast both to that of the finishing trade employers and to the picture presented above of trade unions in the spinning and weaving sections. Apart from a few small craft unions there is only one central representative body, the National Union of Dyers, Bleachers and Textile Workers which was formed about ten years ago. The National Union is not only the principal negotiating channel for cotton textile finishers; it is also the central operatives' organisation for the wool textile industry.

13. Nearly all the proprietors of the Manchester packing warehouses are represented by the Master Packers' Association, whose counterpart on the operatives' side is the Joint Board of Inside Warehouse Workers.

C. Merchanting Organisations

14. The principal organisations representing the interests of distributors are the Manchester Chamber of Commerce and the Cotton and Rayon Merchants' Association. Reference has already been made to the fact that the Manchester Chamber was for long the recognised mouthpiece of the cotton industry on matters of commercial policy, and especially those in which action by British or foreign governments affected the well-being of export trade, e.g., the imposition or increase of tariffs. This function still continues in many respects, and most converters dealing with the export markets are members of one or more of the market sections of the Chamber, which are co-ordinated through the Textile Exporters' Committee of the Chamber, but as the Chamber's activities embrace other industries and trades besides cotton, the Cotton and Rayon Merchants' Association was formed in 1939 for the purpose of protecting the specific interests of distributors of cotton and rayon goods. The Association now has some 800 members organised in separate sections for the home market, export trade, yarn merchants, grey cloth merchants, converters of cotton piece goods and converters of rayon piece goods. Many converters belong both to the Chamber of Commerce and to the Association.

D. Other Organisations

15. The large sectional organisations mentioned above are supplemented by a number of others representing more specialised interests. There are, for instance, the recently formed Condenser and Allied Spinners' and Manufacturers' Association, which claims to represent the interests of 90 per cent. of the firms engaged in spinning and weaving cotton waste yarns, the Domestic Textiles Federation and the Furnishing Fabrics Federation. Each of the latter organisations comprises a number of affiliated associations. The Domestic Textiles Federation represents manufacturers and distributors of towels, sheets, tickings, quilts, tablecloths and similar goods. The Furnishing Fabrics Federation likewise represents both manufacturers and wholesalers; its interests are not confined to cotton and rayon goods, although cotton and rayon are of major importance to most of its members. Many firms belong to more than one organisation, e.g., it is usual for spinners and manufacturers in the Lancashire area who belong to these specialised organisations to belong also to the Master Cotton Spinners' Federation or to the Cotton Spinners and Manufacturers' Association, and many of the converting members belong to the Chamber of Commerce and the Cotton and Rayon Merchants Association.

16. The organisations we have described up to the present are mainly centred on the Lancashire area, but there are, in addition, associations and trade unions representing textile employers and operatives in other parts of the country (e.g., in Scotland, Northern Ireland, etc.) which have a substantial interest in cotton. In addition, there are bodies such as the Wholesale Textile Association, many Chambers of Commerce, organisations representing garment makers, retailers, etc., which are concerned in the converting, distribution or use of cotton yarn and fabrics.

E. Managerial and Specialist Associations

17. The keen interest which managers and other senior officials in the producing sections have always taken in the technical aspects of their work is well illustrated by the active existence of a large number of local managers' associations, most of which are now affiliated to the National Federation of Textile Works Managers' Associations. Both the Federation and its constituents arrange for technical discussions and papers, and for visits to mills

and works. Foremen and other supervisors are also organised to some extent, partly in general (industrial) associations and partly in comparatively small, specialised bodies.

3. CENTRAL ORGANISATIONS

18. The number and variety of associations in the industry illustrate its ramifications and complexities and the industry has in the past suffered from the lack of an effective central organisation able to speak on behalf of all sections. Moreover, many of the principal sectional organisations were formed at a time when the range of calls made upon them was relatively narrow and their constitutions were not well devised for dealing with the problems of a later day. The machinery of consultation and of reference back to constituents was too frequently slow and cumbersome.

A. The Joint Committee of Cotton Trade Organisations

19. The history of the Joint Committee of Cotton Trade Organisations affords an example of the difficulties we have in mind. Established in 1925 as an *ad hoc* body representing employers and merchants to investigate the causes of the continued depression in Lancashire, by the inclusion of operatives' representatives in 1928 the Committee gained a title to speak on behalf of all sections in matters of common concern. Between 1928 and 1937 the Joint Committee brought forward several sets of proposals for re-organisation within the industry, but its work was hampered and delayed by the fact that its members were not authorised to commit their constituents, and by the unwillingness of the sectional organisations to allow the Committee to exercise initiative. Thus a scheme for dealing with redundant spindles, advocated by the Joint Committee as early as 1931, did not bear fruit until 1936, and the Committee's main achievement, the preparation for, and promotion of, the Cotton Industry (Reorganisation) Act, required so much time, first for reaching a sufficient measure of agreement within the industry and later for discussions with other interests, that the Act reached the Statute Book only in August, 1939, to be frustrated at once by the outbreak of war.

B. The Cotton Board

20. The Reorganisation Act of 1939 provided for the establishment of a Cotton Industry Board comprising fifteen persons—an independent chairman, two independent members " having special knowledge of the industry," nine representatives of producers and merchants and three representatives of Trades Unions, to be appointed by the Board of Trade after consultation with the appropriate trade organisations. It had been hoped that this Board would have supplied the central unifying organisation which the industry had so long lacked, but this hope was frustrated when the outbreak of war compelled the suspension of the Act. As a temporary measure, the President of the Board of Trade and the Minister of Supply jointly appointed a Cotton Board of purely advisory character, which acted as a link between the Government and the industry until March, 1940, when Parliament passed the Cotton Industry Act, setting up the present Cotton Board. Its main purpose at the time was to lead and stimulate the export drive in the cotton industry. Its other functions were broadly :—

(1) To promote and encourage technical and market research.

(2) To collect and publish statistics and other information relating to the industry ; and

(3) To act as a negotiating body on any matters affecting the industry.

21. The Cotton Board, under the Act, comprises an independent, full-time, paid Chairman, two full-time paid members appointed " as having special

knowledge of the industry " and " as having special knowledge of the business of a merchant," six other members appointed as having " special knowledge of " the various sections of the industry, i.e., raw cotton merchanting, the manufacture of rayon fibre, spinning, weaving, finishing, and export merchanting, and three members appointed as " having special knowledge of " the interests of operatives in spinning, weaving and finishing respectively. The members of the Cotton Board are appointed directly by the Board of Trade; the Act does not require the Board of Trade to consult the trade organisations before making appointments.

22. The advent of Lend-Lease and the consequent eclipse of the export drive for the rest of the war on the one hand, and on the other the development of Governmental control over the industry as the nation's energies were more and more concentrated upon the direct war effort, caused a considerable modification of the Cotton Board's activities as they had originally been conceived. The executive machine built up by the Cotton Board has been used by the Board of Trade to administer important sections of the Utility cloth scheme and other parts of the control over the cotton industry at home and in its export trade. In these matters the Cotton Board acted as agents for the Board of Trade. At the same time the Cotton Board has been intensely active on behalf of the industry, both in stimulating the industry to action where action by the industry itself was called for and in representing the industry in discussions with the Government and with other interests outside the industry.

23. The members of the Cotton Board have no responsibility, as members of the Cotton Board, to any other organisations in the industry. The Board is therefore a group of individuals of acknowledged capability and experience covering all sections of the industry, which is able to express informed and objective opinions on the problems of the industry, as well as acting in those matters in which it has power to act. It has no power to compel firms in the industry to follow its lead but it has none the less won a wide measure of support. It seeks always to work in harmony with the other organisations in the industry.

Its success can be gauged by the unanimous decision reached by a conference of all the main organisations called by the Manchester Chamber of Commerce in 1942-3 that a similar body containing representatives of all sections of the trade should be retained after the war, and by the similar recommendation made unanimously by the Post-War Committee of the Cotton Board, a body which included, in addition to the members of the Cotton Board, 17 representatives of the major trade organisations.*

24. The Cotton Board is financed by a statutory levy of 5d. per 100 lbs. charged on all raw cotton purchased by spinners.

The Cotton Board's Post-War Committee recommended that a post-war Cotton Board should be financed by levies charged on machinery, turnover, and/or registration fees, according to the circumstances in each section, rather than by a levy on raw cotton used by spinners as at present.

25. We are ourselves satisfied that a central organisation on the lines of the Cotton Board will be needed in the future. We make more detailed recommendations on the subject in Part II of this Report (Recommendation XXX). But a central organisation, if it is to maintain effective contact with the many sections of the industry, whether to ascertain the views of the sections or to transmit its own views to them, must have the assistance of well-organised and

* The Conference recommended that the members should be elected by the trade organisations. The Post-War Committee proposed the members should be appointed after consultation with the trade organisations, but should not be responsible to them.

co-ordinated sectional bodies. As we have pointed out above, the associations in the industry are very numerous and varied. The existence of so many separate organisations has sometimes led to overlapping, and the high degree of autonomy enjoyed by each has on occasion delayed or frustrated action which might have been beneficial to the industry. In this connection we quote the following passage from the Report of the Cotton Board's Post-War Committee :—

> " At present in some sections there exists a multiplicity of organisations and in others the organisations are not supported by as large a number of the interested firms and operatives as it is clearly desirable they should be in the future. We think the consolidation and unification of sectional organisations should be adopted by all concerned in the industry as an objective to be achieved as soon as possible."

What is needed is a comprehensive and well co-ordinated set of organisations fully representative of the sections for which they claim to speak and able to ascertain and express the views of their members expeditiously and reliably. We commend this matter to the earnest attention of the industry. We understand that discussions have recently been taking place in several sections with a view to modifying existing organisations or establishing new ones which can deal effectively with the problems likely to confront the industry in future. We hope that these discussions will lead to fruitful action in these cases where reform is needed.

4. RAYON

26. As we have explained elsewhere in this Report, the use of rayon in the Lancashire textile industry is so extensive and is of so much importance to the future of the industry that we have been obliged to give considerable attention to it. Accordingly, a note on the trade organisations concerned with those parts of the rayon industry which overlap with cotton is not out of place.

The central organisation is the British Rayon Federation which comprises most, if not all, of the organisations on the employers' side, at all stages of the industry from the production of rayon filament and staple fibre down to the distribution of finished cloth. The sectional organisations of most direct importance to Lancashire are :—

The Rayon Staple Spinners' and Doublers' Association (staple fibre spinners and doublers).
The Rayon Weaving Association.
The Spun Rayon Fabric Dyers' Group.
The Flat Dyed Rayon Group.
The Rayon Crepe Dyers Group.
The Federation of Calico Printers.
The Rayon Converters' Section of the Cotton and Rayon Merchants' Association.

The Federation itself does not deal with labour problems, but covers a wide field of other interests, including export trade development, education, publicity and research.

27. Operatives in the Lancashire area engaged in the spinning of rayon staple fibre and the weaving and finishing of rayon fabrics are mainly organised in the same trades unions as are the operatives engaged in the corresponding processes on cotton. Operatives engaged in the actual production of rayon are for the most part organised in one or other of the two great general unions —the Transport and General Workers' Union and the Municipal and General Workers' Union, but in a number of rayon producing establishments where winding and other ancillary processes are carried out, some of the operatives concerned belong to one or other of the cotton trade ancillary unions mentioned in section 2 above.

Chapter XI

POSTSCRIPT ON PRESENT REALITIES

1. In the foregoing chapters we have tried to look beyond the conditions of the moment to the fundamental factors which will in the long run influence the industry's development. It is necessary now to consider how our appreciation fits in with the facts of the present situation. We have wished to avoid giving undue importance to what may be temporary conditions but, on the other hand, it would be unrealistic to ignore what is happening at the moment.

The Immediate Problem

2. Our task has been to consider what is necessary to create a " prosperous industry," and we have taken this term to connote a magnitude sufficient to supply all home requirements and, in addition, to command substantial export sales. To turn from this conception to the cold facts of the present situation is an unpleasant shock.

What scale of production is necessary for a " prosperous industry " as interpreted above ?

The Cotton Board's Post-War Committee gave three alternative possibilities, one pessimistic, one moderate, and one—the most optimistic—which was put forward as the goal for which the industry should plan. Each of these three forecasts contemplated a requirement of 700 million pounds of spun yarn for the home market, while the export requirements were 282, 480 and 773 million pounds of spun yarn respectively.* The most pessimistic forecast, therefore, called for a total production of 982 million pounds of yarn and the most optimistic for 1,473 million. Current production (taking the weekly average for February), is running at a rate of no more than about 715 million pounds per annum. At the present rate of production, therefore, the industry is producing only 15 million pounds of yarn beyond what would be necessary to satisfy the home demand in full—a quantity sufficient to give a piece-goods export of about 50 million yards per annum. The actual volume of cotton piece-goods exports alone (i.e., excluding spun rayon and made-up goods) in 1937 was 1,921 million yards and in 1938, which was accounted a bad year, 1,386 million yards.

3. The current production figures present a most disturbing picture whether looked at from the point of view of the industry or of the nation with its need for a 75 per cent. increase over the pre-war volume for all British exports. From the appreciation given in Chapter V it will be seen that the prospects of increasing production by getting more workers into the industry are poor. If, therefore, there is to be a margin of production to support an important export trade it can only be obtained by increasing productivity per worker.

4. The actual records of productivity per worker over the recent period are disquieting. Table 44 shows the labour force, output and machine activity in the spinning section, and Table 45 the average weekly output of yarn per person employed. The latter table includes an estimate of the average weekly output adjusted to take account of the changes in the relative output of different counts of yarn. We believe this to give a reasonably accurate picture of the position.

*For the sake of simplicity we discuss the position in terms of yarn production, since that is the real determining factor.

TABLE 44

EMPLOYMENT OUTPUT AND MACHINE ACTIVITY IN SPINNING

	Employment†	Output (weekly average in million lb.)							Spinning Spindles	
		Cotton (excluding waste yarns)				Waste Yarns	Spun Rayon and Mixtures	Total all Yarns	Running§ (M.E.) Millions	Percentage of No. in Running Mills
	000's	Up to 26's	27–80's	Over 80's	Total					
1937	140·0*	12·30	10·60	0·80	23·70	2·38	0·40	26·48	39·3	89
1941	91·0	10·74	4·67	0·38	15·79	1·42	0·65*	17·86	21·1‖	80‖
1942	82·5	9·49	4·28	0·33	14·10	1·18	0·64	15·92	19·2	79
1943	79·5	9·33	3·77	0·33	13·43	1·20	0·66	15·29	18·1	75
1944	75·9	8·79	3·68	0·32	12·79	1·25	0·59	14·63	17·3	71
1945										
Jan.-Jun. ...	73·5	7·94	3·39	0·30	11·63	1·17	0·52	13·32	17·0	70
July	69·3	7·69	3·24	0·29	11·22	1·11	0·47	12·78	16·0	66
August ...	67·2	6·24	2·88	0·29	9·41	1·00	0·44	10·85	15·5	60
Sept.	75·4	7·98	3·31	0·31	11·60	1·15	0·52	13·27	17·3	67
Oct.	77·6	8·52	3·68	0·35	12·55	1·30	0·58	14·43	17·7	68
Nov.	79·4	8·54	3·77	0·37	12·68	1·30	0·59	14·57	18·1	67
Dec.	79·8	7·06	3·37	0·35	10·78	1·13	0·50	12·41	18·1	65
1946										
Jan.	78·7	7·60	3·60	0·36	11·56	1·21	0·53	13·30	17·8	63
Feb.	82·6	8·06	3·97	0·39	12·42	1·32	0·58	14·32	18·6	63

† Managerial and office staffs are included and part-time workers are counted as halves.
The figures relate to the average numbers actually working on the last full working day of the week.

* Estimated.

§ Excluding waste spindles.

‖ Fourth Quarter only (i.e., after concentration was effected).

TABLE 45

YARN OUTPUT IN RELATION TO LABOUR EMPLOYED

	Total Operatives	Weekly Average Output of Single Yarn	Output per operative per week	Output per operative as percentage of 1937	Weekly Average Output of Single Yarn on weighted basis*	Weighted Output per week per operative	Weighted Output per operative as percentage of 1937
	000's	million lb.	lb.	per cent.	million lb.	lb.	per cent.
1937	140·0†	26·48	189	100	45·58	326	100
1941	91·0	17·86	196	103·7	26·38	290	89·0
1942	82·5	15·92	193	102·1	23·66	287	88·0
1943	79·5	15·29	192	101·6	22·26	280	85·9
1944	75·9	14·63	192	101·6	21·43	282	86·5
1945							
Jan.-June ...	73·5	13·32	181	95·8	19·60	267	81·9
July	69·3	12·78	184	97·4	18·82	271	83·1
August‡ ...	67·2	10·85	161	85·3	16·33	243	74·5
September ...	75·4	13·27	176	93·2	19·47	258	79·1
October ...	77·6	14·43	186	98·4	21·35	275	84·4
November ...	79·4	14·57	183	96·8	21·70	273	83·7
December‡ ...	79·8	12·41	155	82·0	18·85	236	72·4
1946							
January‡ ...	78·7	13·30	169	89·5	20·14	256	78·5
February ...	82·6	14·32	173	91·6	21·83	264	81·0

* Each lb. of yarn in the 27's–80's range counted as 2½ lb.; each lb. of yarn above 80's counted as 5 lb. † Estimated.

‡ These months must be regarded as abnormal owing to holiday periods, heavy sickness, etc.

5. It will be seen from these tables that the output per operative, on the weighted basis, was substantially lower from 1941 onwards than in 1937, although a considerable amount of overtime was worked in the war years. The fall may reflect the lack of balance in the labour force (of which spinners have complained since 1940) and the withdrawal of many of the younger men and women from the spinning mills for the forces and munitions work. In 1945 the weighted average output was 20 per cent. below the 1937 average and showed little sign of recovery. The addition of some thousands of operatives to the labour force in recent months has apparently done nothing to redress the want of balance which has reduced output per operative, probably because the re-opening of mills under deconcentration has had the effect of spreading the already inadequate labour force more thinly. The first of the tables set out above shows that the average percentage of spindles running in open mills fell from 70 per cent. in the first half of 1945 to 63 per cent. in February, 1946.

6. A proper diagnosis of the position would require a thorough and detailed enquiry since many factors must be taken into account. Lack of balance in the labour force is only one of the important factors. But, whatever factors have been at work, and whatever may be the weight which should properly be attached to each, the position gives cause for grave concern. As we have already said, the problem of increasing productive output per head is as urgent now as it was when the Platt Mission was charged to investigate it in time of war. The facts of to-day point to the need for inspiring leadership and for a determined collective effort directed to taking full advantage of all the possible methods mentioned in our earlier chapters for raising standards of operating efficiency and increasing output per head. We refer to :—

(*a*) The introduction of the best mechanical equipment. (See Chapter VI.)

(*b*) The adoption of every possible measure for improving the utilisation of labour so as to increase output without increasing the work load. (See Chapters V and VI.)

(*c*) The use of the most appropriate types of cotton for each product and the application in industrial practice of scientific knowledge as to their physical properties. (See Chapter III.)

(*d*) The planning of orders in such a way as to give economic production runs. (See Chapter VII.)

9. All these lines of action must be brought into play together. The cogency of what has been said in regard to them in the foregoing chapters is greatly increased by the facts of the immediate situation. These facts should be appreciated by all who have a part to play in the industry.

Chapter XII

A REVIEW OF EARLIER REPORTS AND RECOMMENDATIONS

1. It was part of our terms of reference to consider earlier reports and recommendations. There have been many of these; and, to be properly understood, they must be seen against the background of the conditions in which they were made. The conditions of the inter-war years have been briefly described in Chapter I. It was there pointed out that the dominating problem in that period was loss of export markets and the resulting surplus capacity in labour and machines leading to mass unemployment and demoralising internal competition, and that the future problem will be entirely different, namely, the problem of how to transform the industry into one which can produce the necessary volume of goods at competitive prices working with a labour force 60–65 per cent. of that available before the war and requiring much higher wages.

2. The reports made in the inter-war years must be read with an appreciation of this change in the problem. They are relevant in so far as their recommendations were aimed at increasing productive efficiency and there are also lessons of interest to be learned from examining the results or lack of results to which they led.

"Clynes Committee" Report of 1930*

3. The first of these reports which it is necessary for us to mention was made in 1930 by a committee of the Economic Advisory Council under the chairmanship of Mr. J. R. Clynes. Its general judgment of the situation was "Until far-reaching improvements are introduced into the British industry there is no likelihood that Lancashire will be able to arrest the decline in her export trade, still less that she will recover the trade which she has lost." (Para. 69 (v)). The main improvements recommended by the Committee were: (1) Quicker introduction of improved machinery, such as high draft ring spindles, high speed winding machinery and automatic looms—the most significant of all the developments abroad. "Important evidence" was received that "automatic looms could not be worked economically on a single shift per day." (2) The creation of larger units in spinning and weaving. (3) "The formation of strong and well-balanced amalgamations among the merchants also deserves careful consideration." (4) The development of co-operative effort, through the Joint Committee of Cotton Trade Organisations, in such matters as the production and marketing of standard lines, economic investigation co-ordinated with technical research, organised propaganda and the discovery of new uses for cotton.

4. On amalgamations the Committee made the following points: (1) They would permit full advantage to be taken of any possibilities of technical improvement and would secure economies in production costs; (2) they would enable a common policy to be formulated and carried into effect within each of the sections; (3) they would provide a firm basis for such a measure of co-ordination between those engaged in the various processes of production and marketing as will enable Lancashire once more to take the initiative in the markets of the world. These units should be strong enough to formulate a definite production policy and to enter into arrangements with one another

* Cmd. 3615.

and with the other sections of the industry, including the merchants and the finishers, for a forward policy. The finishers are already combined to a substantial extent, and the formation of strong and well-balanced amalgamations among the merchants also deserves careful consideration.

5. Three special points about this Report call for comment in connection with our own task :—

1st : Although the report showed sixteen years ago an appreciation that Lancashire's equipment, labour deployment, wage systems and marketing methods were not adapted to modern conditions, very little has been done to introduce changes. Our analysis in Chapter I has shown some of the reasons why.

2nd : The report said " Lancashire must choose " between losing her trade, reducing her standard of wage and living, or improving her methods. In fact, however, " Lancashire " has never yet been an entity capable of making a collective choice. Moreover, whilst the alternatives lying before the industry as a whole may have presented a clear choice, the case for each of the hundreds of individual units concerned may have been both difficult and different. Since 1930 considerable advances have been made towards methods of collaboration which should make collective understanding and collective action possible. But there is need for still further advance in this direction and the problem of how to obtain that is one of the chief matters with which we have had to concern ourselves.

3rd : The Report was written with the conception that the Lancashire industry, by improving its methods, could recapture the bulk trade to India and the East, on which its pre-1914 greatness had mainly depended. The Report laid proper stress on the importance of production costs on Lancashire's competitive position, but made no attempt to estimate what would be the effect on costs of the measures it proposed. It seems to us impossible that by re-equipment Lancashire would have been able either to defeat Japanese competition, as it then existed, in the bulk markets or, so far as India was concerned, to have retained the Indian market in the face of Indian nationalist policy.

United Textile Factory Workers' Association Report

7. In 1943 the Legislative Council of the United Textile Factory Workers Association issued a report on ways and means of improving the economic stability of the cotton textile industry. The following were the main features: (1) It advocated socialisation and in the meantime the maintenance of the government control established during the war. (2) The future expansion of the industry was stated to be dependent on re-organisation and the establishment of an International Control Board (*a*) to allocate raw cotton at stabilised prices, (*b*) to allocate quotas for exports of piece-goods and fix their prices. (3) " Government policy should be directed towards Freer Trade between nations." (4) Replacing of inefficient by modern machinery. (5) Re-planning and re-spacing of machinery. (6) Fixing of prices and inspection of costs. Balance sheets of private limited companies to be available for public inspection. (7) Improved working conditions, education and research. (8) Guarantee of a living wage. (9) Elimination of redundancy among merchants. (10) Closer co-operation between merchants, finishers and manufacturers. (11) The formation of combines in both the spinning and the weaving sections, and of vertical combines.

8. The Report contained several useful recommendations which are in harmony with our own conclusions, but its main plan was built round the idea of centralised control and the eventual socialisation of the industry. This involves a fundamental principle which we have felt bound to regard as incompatible with our terms of reference.

Report of Cotton Board Committee on Post-War Problems

9. This Report, which was compiled in 1943 and submitted to the President of the Board of Trade in January, 1944, has been an indispensable foundation to our inquiry. Of special value to us have been its review of many aspects of the problem, together with calculations as to future market demand worked out on various assumptions and its survey of the position as regards labour supply.

10. The Report reached the following main conclusions :—

(*a*) A post-war Board for the industry should be set up to carry on and extend the work of the Cotton Board.

(*b*) The post-war industry should be based on the 1939 spindleage. For the time being the installation of new spindles should be under suitable control.

(*c*) On the basis of 1939 spindleage there is redundant capacity in weaving and finishing which should be eliminated. In weaving, the surplus capacity may be substantially eliminated through re-spacing and the consequent scrapping of looms, but pending clarification on this point new looms should be installed only against the equivalent scrapping of old looms. In finishing, immediate action is called for in the shape of a redundancy scheme to reduce capacity.

(*d*) There are too many merchants, but no particular action need be taken by any central authority in regard to them beyond pointing out the facts of the situation.

(*e*) A substantial measure of re-equipment is necessary but extravagant statements on the subject are to be deprecated.

(*f*) Re-equipment will not call for special State financial facilities if owners of capital see a secure reward for their enterprise. This secure reward could be guaranteed in two ways :—

(i) Modification of taxation law and practice to enable the cotton industry to use profits for re-equipment in the post-war phase.

(ii) Statutory schemes for enforcing minimum prices or margins. Upon such schemes all the foregoing measures depend. The Committee said (para. 48) :

" The key feature of the Cotton Industry (Reorganisation Act), 1939, was that it made possible for the industry the pursuit of a policy of managed prices, by providing for the statutory enforcement of schemes for minimum prices or margins. Price management is likewise a key feature of our report, since we believe there is no other policy by which the cotton industry can be restored after the war to the state

> of efficiency which is essential in the national interest, as it is for the provision of reasonable wages and good working conditions for the workpeople and for a fair return on the capital engaged. Almost every other part of our Report is dependent upon this one; we see no prospect of implementing the plans and hopes implicit in the Report as a whole unless this part is made possible of achievement."

11. Whilst it will be seen that our own diagnosis and recommendations are in a number of matters in accord with this Report, there are three major points on which we cannot be satisfied with its conclusions.

(*a*) We cannot agree with the Report's reliance on statutorily enforceable minimum prices as a key feature for any post-war plans. Such a conception appears to us to be a carry-over from pre-war conditions which will be entirely changed. The major cause of troubles in the past was that the industry had got caught up in a frame of redundant capacity from which it could not release itself. That was the cause; weak selling was the symptom. No cure can be effected by mere treatment of the symptom. Compulsory minimum prices to prevent weak selling can never restore health. Such treatment cannot get at the root of the trouble and could not be applied so drastically as to be effective without setting up dangerously demoralising reactions.* The true remedy must be sought by different means. The spirit of confidence and expansive competitive enterprise which is essential for a prosperous industry can never be created unless the industry is so organised as to be capable of adjusting itself to its market outlets. There was something to be said in 1939 for a plan which would forcibly stop weak selling long enough to give the industry a chance to readjust its capacity to its outlets. But now conditions have entirely changed. In the first place the shortage of labour has changed the whole aspect of the " surplus capacity " problem. That still remains a serious problem, but in the form, for the present at least, of excessive plant competing for an inadequate labour force instead of excessive productive capacity competing for inadequate markets. In the second place the war has cut into the position in such a way as to create a new chance to consolidate and make a fresh start. We look forward to a short period when the difficulty will be not to find market outlets, but to produce enough to meet the home and export demand, and when, indeed, as a measure of national policy, some system of controlled prices will have to be maintained. This period can give an

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* The experience of war price controls has shown how difficult it is to fix prices at what they ought to be with an adequate standard of efficiency. On this we might quote the conclusion reached in the examination of the matter by the Select Committee on National Expenditure. (14th Report, 1942/3, page 15.)

" The main conclusion . . . is that there has not yet been evolved a technique which solves satisfactorily the essential problem of how, in the absence of free competition, to settle ' the right price ' to be paid for a particular article."

The Committee went on to say :—

" So long as there is any control of prices, any limitation of free competition either by Government action or otherwise, or any form of Government assistance to particular industries there will be a continuing need for answers to the questions : How can standards of efficiency be settled ? How can the attainment of these standards be checked ? What sanctions can be applied to those who fall short of the standards ? How can the progressive increase of efficiency best be stimulated ? "

We do not believe that there is yet any satisfactory answer to these questions. This, incidentally, means that, if any voluntary price-regulating arrangements become effective in the industry they will need most careful watching in the public interest.

opportunity for getting the industry into a healthy position. This is a guiding idea which shapes all our recommendations.*

(*b*) We cannot find that the Report faced up to the realities of the labour position. It proposed to accept the 1939 spindleage as the basic factor for settling the size of the industry, i.e., it assumed that 39 million M.E. spindles were to be kept running. To operate them and the corresponding weaving capacity would, according to the Report, require a labour force in the spinning and weaving sections of about 390,000—a figure with which we agree. Yet the Report's own review of the labour position showed expectations of no more than 270,000 after the transition from war to peace conditions had been completed. The Report did not show how the gap of about 120,000 was to be filled.

(*c*) The Report did not develop the significance and implications of embarking on a policy of mechanical re-equipment. In our view the problem of preserving the future prosperity of the cotton industry is overwhelmingly one of accepting the need for substantial re-equipment and then following out all the reactions which this will involve. Our own views on this matter are stated in our recommendations.

Report of the Cotton Textile Mission to the U.S.A.

12. Lastly we must mention the report of the " Platt Mission." This has been referred to so often in the foregoing chapters that we need not deal with it fully here. The findings of this Report in its own field have not been seriously challenged and in our view have a most important bearing on the future of Lancashire. The recommendations were directed to the purpose of achieving maximum production from a limited labour force, and, as we have stated earlier, we regard that purpose as possessing an urgency to-day not less than it had in time of war. Every effort should be directed to its fulfilment, subject to the provisos that in peace-time commercial considerations cannot be

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* Reservation by Mr. Reynolds :—

If " there was something to be said in 1939 for a plan which would forcibly stop weak selling long enough to give the industry a chance to readjust its capacity to its outlets," there is just as much to be said for such a plan to-day.

I do not agree that the " conditions have entirely changed," or that " the shortage of labour has changed the whole aspect of the surplus capacity problem." Such reasoning is based upon an over-simplification of the problem since it fails to distinguish between what the main report itself clearly defines as " unbalanced redundancy " as distinct from redundancy originating from other causes. (Part II, page 161, footnote to para. 8.)

The statements quoted might be true if the cotton industry were an integrated business in which each stage of manufacture was correctly balanced with all other stages, but that is just what the cotton industry is not. As long as some sections have a potential capacity much in excess of that of others upon whom they depend for their " raw material," there will be disruptive internal competition, and this will not be mitigated by the fact that all the units are under-staffed. In fact this condition may accentuate the trouble since the under-staffed and under-employed units are in the hands of a large number of individual owners whose first concern is their own survival.

As long as " unbalanced redundancy " exists in any one section of the industry that section will be exposed to " weak selling," even though the total market demand for the products of the industry exceeds its total productive capacity.

In our main report we recognise the necessity of eliminating " unbalanced redundancy " by methods which will involve the acceptance of substantial financial obligations. I do not think the large number of individual units of which the sections consist can assume those obligations unless they have confidence that, at least during the period within which the contraction is being brought about, they will not be exposed to the disrupting force of intense price competition.

In my view the " controlled " prices which are envisaged for a period should not exclude the maintenance of remunerative prices until the productive resources of the various sections of the industry have been brought more nearly than they are at present to a state of balance. I do not believe that it will be possible to achieve this end by voluntary methods without an assurance that the structure of " controlled " prices will have a " floor " as well as a " ceiling." R. C. R.

disregarded and that the need of the cotton industry for capital equipment must take its proper place in a programme adapted to the interests of the nation as a whole. Subject to these observations we set out below a brief summary of the Platt Report's recommendations with which, as will be clear from our own recommendations, we are largely in agreement.

GENERAL RECOMMENDATIONS OF PLATT REPORT

13. (*a*) A higher degree of standardisation and specialisation in British production is needed to allow the introduction of uninterrupted bulk production methods. This will necessitate changes not only in the producing section of the industry but also in the methods of distribution and, in addition, a much closer understanding between producers and distributors.

(*b*) The general standard of technical equipment in British mills needs raising, and re-equipment on a large scale is necessary to meet the required adjustment to standardised bulk production methods.

(*c*) Working conditions in British mills must be considerably improved from the point of view of future labour requirements.

(*d*) A greater degree of co-operation is needed between British spinners and manufacturers in order to effect the maximum rise in the level of production efficiency in both sections.

(*e*) The level of scientific training of the managerial staff of British mills needs raising.

(*f*) There should be greater economy in the utilisation of labour.

LONG-TERM RECOMMENDATIONS OF PLATT REPORT

14. (*a*) There should be a change in the distributing system to permit a closer co-operation with producers and, as far as practicable, the establishment of standardised and bulk production conditions.

(*b*) The modernisation of the industry should be planned on the basis of securing the highest possible production per man-hour. This will necessitate not only the use of high-speed and automatic machinery on the largest possible scale in preparation and weaving, but also fresh bases for labour employment and wage rates which will permit higher labour productivity and higher wages for the operatives.

(*c*) Preliminary investigations should be instituted, without delay, with the following objects :—

(1) To make a comprehensive survey of the existing industrial plant and its suitability for modernisation.
(2) To determine what measure of improvement is possible in existing equipment.
(3) To ascertain the requirements, in terms of equipment, which will result from (1) and (2).
(4) To try out new methods of mill staffing, measure effects on machine and operative efficiency, and formulate simpler wages rates.
(5) To ascertain the extent to which mechanical transporter systems can be used in mills.
(6) To determine the most suitable planning of machinery, with particular reference to machine and labour efficiency and such matters as spacing and driving.

(*d*) To accomplish the work involved, a number of selected mills should be made available for the investigations and a panel of technical experts should be appointed to conduct them. Such a panel should consist of carefully selected personnel comprising progressive men from the spinning, weaving and finishing sections of the industry.

PART II. OBJECTIVES AND RECOMMENDATIONS

1. Part I was concerned mainly with the first of the questions stated in our Introduction, viz.: What is the present position? We must now turn to the others—the objectives to be aimed at, and the practical measures required to attain them. As a prelude it is necessary to make clear two features which govern our conception of the objectives.

GOVERNING CONCEPTIONS

I. A Major Industry

2. First, there is the question of the scope of the industry. Should the objective be to maintain it as one of the major national industries, making the largest possible contribution to British exports? Or should the aim be rather to have a moderate-sized industry relying mainly on the home market, and satisfied to export a few special lines as a marginal activity? These are questions which involve national policy, and may ultimately have to be settled according to what is the right pattern for national economic activities as a whole—a matter which is beyond the scope of our enquiry. But so far as we are concerned, approaching the matter as a Working Party for the cotton industry, we can only give one answer, viz.: we must envisage the maintenance of a major industry and our proposals must be framed with the idea of making possible the maximum healthy growth. We desire particularly to make this clear at the outset in order that our later recommendations may not be misunderstood. In these we envisage certain measures of consolidation; but these measures are proposed not with the aim of contracting the industry's potential productive capacity, but rather at providing a sure foundation and a base from which opportunities for expansion can be taken.

II. Maintenance of Private Enterprise

3. A second main feature in our conception of the objectives is determined by our terms of reference. These make it clear that we are required to submit proposals based on maintaining the system of private enterprise.

We must state how we interpret the implications of this.

On the one hand it seems to us to follow

(*a*) that the aim must essentially be to create conditions in which private enterprise can work successfully, rather than to present a rigid plan for regulating its operation;

(*b*) that, if reliance is to be placed on the system of private enterprise, that system must be given a basis for confidence and reasonable opportunity and facilities to make good; that these words should be generously interpreted; and that the industry could not be

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expected to operate with confidence if a Sword of Damocles of nationalisation were hanging by a hair above it.

On the other hand

(*c*) the industry must be operated in the national interest and play its proper part in the national economy. The interpretation of the position under (*a*) and (*b*) is not inconsistent with, and should be allowed in no way to weaken, the recognition of this;

(*d*) for the very purpose of "creating conditions" in which private enterprise will be able to operate successfully in the future, after the immediate period of post-war transition and reconstruction is over, there is a need during this intervening period for a concerted transitional programme in which the Government must play a part; and it is not inconsistent with the principle of private enterprise to recognise that the main lines of this transitional programme must be settled now and that the unregulated and unassisted activities of the individual units in the industry will not alone be able to accomplish what is required.

4. Beyond all this our recommendations are based on the view that if the industry is to work in the national interest and be strong enough to cope with the difficult problems which lie ahead, world conditions to-day are such that there will be continuing need to secure interaction on occasions between the power of the Government and the initiative of the individual firms, as well as a need at all times for maintaining communication both ways between the two. We are impressed, as we have already emphasised in Chapter I, with the immense gravity of the problems and difficulties confronting the nation, as well as with the special difficulties of cotton. Unless all those working in the separate units are prepared, when necessary, to take into account the interests not only of the industry as a whole but also the broad interests of the nation; unless there is readiness both to agree and implement common policies when necessary for furthering such interests; unless there can be an end of restrictive practices, secretiveness and sectionalism; unless all this is recognised both by employers and wage-earners—then there is little chance of a satisfactory outcome from any proposals. It is fair to claim that the Government should be helpful and show confidence in the industry; but that implies that all engaged in the industry must justify the confidence and be on their side helpful and co-operative.

5. We have written at some length on these matters, which to many may appear obvious, because there still seem to exist interpretations of "private enterprise" which, in our view, are not only out of date and unworkable in present conditions, but also inconsistent with the declared policy of all the main political parties as well as with the attitude already adopted by the cotton industry itself. Some form of interaction between the Government and private enterprise on the lines which we envisage is in fact a necessary consequence of the whole policy for Full Employment as laid down by the former National Government in the White Paper of 1944. Further, the majority of those engaged in the cotton industry themselves in 1939 recognised—and this view was confirmed in the Cotton Board's Post-War Committee Report—that it could not, in the prevailing circumstances, bring about its own healthy regeneration without reinforcement by some statutory powers for the regulation of free competitive enterprise as it had in fact developed.

THE FRAMEWORK OF OUR RECOMMENDATIONS

6. We envisage the industry's needs as falling under the four main heads set out below:—

THE HUMAN FACTOR

There must be ability and enterprise in direction and management, good leadership, and a spirit of co-operation between all ranks. This spirit must be founded on good conditions of human employment interpreted in the widest sense. These must include a system of good pay, working conditions and advancement so as

(i) to attract, in competition with other industries, the right kind of personnel in all grades from top to bottom;

(ii) to bring the best men to the top;

(iii) to provide the necessary incentives for effort;

(iv) to promote healthy collaboration and understanding between employers and workers which will bring in the Trade Unions as effective partners in promoting the maximum efficiency and well-being of the industry.

OPERATING METHODS

(*a*) *Confidence and Expansive Enterprise.* There must be readiness to face the future not in reliance on restrictive measures based on the constant fear of competition and surplus capacity, but in a spirit of expansive enterprise, and with the determination to achieve the lowest possible cost of production consistently with the attainment of the other objectives.

(*b*) *First-Class Equipment Rightly Used.* This is necessary, both for attaining a greater volume of production, and for securing good conditions of employment, since it is by this means that high standards of earning can be attained without unduly raising costs of production.

(*c*) *Suitable Financial Facilities and Incentives.* These must be such as (i) to provide resources for an initial programme of modernising equipment and the incentive to make use of them; and (ii) to support a policy of continuous improvement and replacement of industrial equipment.

(*d*) *Efficiency and Economy in Marketing and Distribution.* What is required is

(i) to keep down the cost of distribution to the advantage both of producers and consumers;

(ii) to give producers the greatest possible measure of continuity, consistent with adequate variety, and the opportunity to plan their production programmes economically;

(iii) to leave no potential market openings undiscovered;

(iv) to exploit to the full the potentialities for distinctive good qualities in Lancashire production;

(v) to support an intensive export effort.

(*e*) *Progress and the Use of Science.* There must be readiness to recognise in the widest sense the value of scientific method and scientific knowledge

for the study of problems and opportunities and for progressive improvement not only in technical and commercial efficiency but also in the conditions affecting the health and welfare of those employed in the industry.

EXTERNAL CONDITIONS AND GOVERNMENT POLICY

There must be:—

(*a*) *A regime of international trade* which gives the industry a fair chance of selling its products on their merits in overseas markets.

(*b*) *A domestic policy* which provides a sure foundation for enterprise.

ORGANISATION

There must be :—

(*a*) *An effective organisation for the industry as a whole* (covering both production and distribution) which will be such as (i) to provide a means for full collaboration between the various sections of the industry in the pursuit of the objectives stated above ; (*ii*) to provide a means for interaction with the Government so that, on the one hand, the industry can play its part in the fulfilment of public policy and, on the other hand, public policy can take account of the practical requirements of the industry.

(*b*) *Effective organisations for the various sections of the industry and for the workers employed in them.* The central organisation referred to under (*a*) will largely depend for its effectiveness on the extent to which it can secure co-operation with responsible organisations of employers and employees in the various sections.

7. We have set out this general list of requirements because it is so essential to keep in view both the pattern of the problem as a whole and the inter-dependence of the various parts. And we have deliberately put the " Human Factor " at the head of the list, *since the first in priority of all the industry's needs is leadership, backed by good relations and a good spirit through all ranks.* Without that, first-class mechanical equipment and all the other practical steps which we recommend may be of no avail. Apart from this we regard the creation of satisfactory conditions of employment as of primary importance, not only as an end in itself but as an indispensable element in a prosperous and progressive industry. Indeed the view which dominates all our conclusions is that, apart from the urgency of the national need for greater production, the most compelling reason for seeking measures to improve operating efficiency is that only by such measures can good standards of workers' earnings be ensured. For that very reason, it is to such measures that we must direct our first attention.

THE STEPS PROPOSED

CONFIDENCE AND EXPANSIVE ENTERPRISE

8. As the first point under the heading of Operating Methods we have put " confidence and expansive enterprise," and we have already made clear our view that the key to this is to be sought, not in restrictive price-regulation schemes, but in getting the industry so organised as to be capable of adjustment to its market outlets. Following on this reasoning it might be argued that a policy for the industry cannot be discussed without some preliminary estimate of what the market outlets are likely to be. This may seem to raise all the old

questions about " redundancy "* which dominated discussions in the inter-war years and which still coloured the report of the Post-War Committee of the Cotton Board. But we must repeat, since it cannot be too strongly emphasised, that, as a result of the change in the labour position, the picture has completely altered. Unless there is a great increase in the labour force there can be no problem of surplus capacity or redundancy *in the old sense.* The plant is there, but much of it is old and most of it was designed for a time when labour was plentiful and cheap. That creates a new form of redundancy, and the immediate problem is how to get the best production result—taking into account both quantity and cost of production—with the labour force which will be available. In saying this we do not mean to suggest that the volume of possible market outlets is not a very important factor which must be taken into account in regulating the industry's long-term policy. We have in Chapter VIII reviewed the conditions affecting this question and we shall, in later paragraphs, make certain recommendations with special reference to international trading conditions and to the guidance and support which can fairly be asked for from the Government in connection with this and other matters, which we regard as of the highest importance. But the industry's first duty is to tackle a different question—how to attain in the existing conditions the highest possible degree of competitive efficiency. Without that it is little use to talk about the size of markets or of claims for Government support in securing fair international trading conditions, since without that it cannot expect to attract an adequate labour force or supply the home market at proper prices, much less have any sure foundation for a substantial export trade.

Foundations for a Practical Programme

9. We therefore turn first to consider how the steps in a programme for increasing productive efficiency would work out and what consequences they will involve. The case is complicated because conditions in each of the three producing sections are different. We propose, therefore, to start by going over the position step by step with reference mainly to the spinning section, and then, in later paragraphs, to consider how far the conclusions reached in regard to that section will apply to the other two. That is in any case an appropriate course, since the spinning section is the foundation for the whole industry and its output mainly determines the possible volume of activity in the other sections.

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* As it is impossible to avoid using the word " redundancy " and as it can apply to a number of different conditions, it will be convenient to distinguish these by special terms. In our review we are concerned with three different types.

(1) " *Commercial Redundancy,*" by which we mean a condition in which the available labour force and machinery are capable when fully employed of producing a quantity of goods greater than that for which market outlets can be found. (This assumes that adequate raw material supplies are available.)

(2) " *Technological Redundancy,*" by which we mean a condition in which the plant is too extensive to be worked by the available labour force. The argument in the later paragraphs is that there is a substantial amount of technological redundancy in the industry. That is to say, taking the spinning section as an illustration, if the existing 39 million (M.E.) spindles are capable of producing 1,300 million pounds of yarn per annum, then, even assuming that there will be market outlets for that quantity, and therefore no "commercial redundancy", there is considerable "technological redundancy" because there is not a sufficient labour force—used according to present methods—to keep 39 million spindles running.

(3) " *Unbalanced Redundancy,*" by which we mean the condition where one section of the industry has got out of balance with the others, e.g., if the capacity of the weaving section is too great to be kept in full operation by the maximum supply of yarn which it could get from the spinning section working to full capacity.

How Things Will Work Out

10. Approaching the matter in this way, the starting point must be the labour position. The main facts about the present position are brought out in Chapters V and VI. In order to operate the whole of the spinning* capacity now in place, together with a balancing amount of weaving capacity, according to pre-war methods, the labour force required is about 390,000—(190,000 for spinning and doubling and 200,000 for weaving). There were actually available at the end of January, 1946, 225,250 (spinning and doubling 117,250, weaving 108,000). A deficiency of 72,750 in spinning and doubling implies that, if the available labour were to be distributed evenly and in a balanced manner over all the mills, none could operate at more than 61½ per cent. of capacity. We must, moreover, point out that calculations based on the overall figures may be quite unrealistic. The actual results for the percentage of effective capacity are likely to work out worse than the figure of 61½ per cent. owing to lack of balance between various types of labour.

11. Clearly no permanent structure of prosperity can be erected on this basis, if pre-war methods of working are continued. Costs per unit of production would be too high for competitive efficiency, and the volume of production would be inadequate to support a substantial export trade.

12. The first obvious line of action is to attract more workers back. But when the possibilities in this respect were reviewed in Chapter V we were forced to the conclusion that it would be unwise to base an appreciation of future prospects and problems on a forecast of anything more than 250,000 workers available for spinning and weaving after the transition from war to peace is completed, and that, with the heavy wastage to be expected over the next few years, the total may drop substantially below this figure—perhaps to as low as 200,000. On this basis the spinning and weaving sections would have something between 50 per cent. and 65 per cent. of the numbers required to operate, according to pre-war methods, the 39 million spindles and balancing weaving capacity. Forecasts of this kind are of course uncertain, and the position is affected by many complicating factors. It is clear, however, that even this reduced labour force cannot be relied upon except on the basis of much higher standards of wages and amenities than prevailed before the war. In short the one certainty which stands out amid all the confusing complications is the conclusion stated in Chapter V that the industry, instead of relying, as in the past, on a plentiful supply of cheap labour, must plan its system of operation for the future on the basis of a relatively small, highly paid labour force.

13. And this leads inevitably to another conclusion supported by our review in Chapter VI. If the industry is to pay high wages to its workers it cannot rely on remaining competitive without giving them the best tools to work with as an essential part of a general programme for increasing production per man-hour.

14. But, once the need for this step is recognised, one cannot stop there. Another question must be faced. If the industry is to install costly new equipment, together with all the increased amenities needed to bring it and keep it in line with modern industrial concepts, can it support the burden of the increased capital charges on a single-shift basis?

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* Reference to spinning throughout the following paragraphs must be read as including both spinning and doubling unless otherwise stated.

The whole question of double day shift working and its social or other implications is now the subject of enquiry by an Inter-Departmental Committee, and it will be for the organisations of employers and workers, in the light of the Committee's Report, to decide policy on this question. Our concern is with the economic aspects of re-equipment and on these certain conclusions are inescapable.

Our review in Chapter VI has shown the advantage in costs, when high-priced capital equipment is installed, of going over to a double-shift system —even allowing for paying the same wage for a 40-hour week on double day shift as for a 48-hour single shift. This is particularly important, since, in viewing the future, we must take account of the growing demand for a shorter working week without reduction in earnings. It is also necessary to recognise that two or even three shifts working has become a general practice in the textile industries of other countries.

Taking all these things into account, we cannot escape the conclusion that the Lancashire industry will be unable to support the capital charges of re-equipment and remain competitive with other countries, without going over to a large measure of two-shift working. It must be appreciated, too, that this is not merely a question of operating costs. There is another aspect of the matter. Two-shift as compared with one-shift working will not only enormously reduce the amount of new plant to be installed but also the time required for completing the process of re-equipment.

15. What has been said in the last sentence points to the next inevitable consequence. The introduction of two-shift working must mean a great reduction in the total amount of equipment required to be maintained by the industry per unit of output. A two-shift 48-hour week would halve the number of spindles needed for a given volume of production. Alternatively a two shift 40-hour week would mean a 40 per cent. reduction. The replacement of mule by ring spindles means a further 33 per cent. reduction in numbers of spindles required.

A Major Transformation Inevitable

16. There must be a frank recognition of the practical implications of this chain of reasoning. The spinning section to-day has in place about 23 million mule and 10½ million ring spindles distributed over some 450 mills, and which, if fully staffed, could produce, with a single shift 48-hour week, 1,300 million lb. per annum of yarn of the counts normally spun before the war. *If it is to maintain the same production, to pay high wages, work with a reduced labour force, and to keep its place competitively with modern spinning industries in other countries, it must envisage its eventual transformation into an industry equipped with a greatly reduced number of modern spindles on a high draft system worked double shifts.* Our Machinery Sub-Committee, in reporting to us said that the slogan ought to be " Fewer and better mills." We entirely agree.

17. We do not suggest that anything like an immediate complete transformation is practically possible. There are many reasons—the available supply of machinery, the human effects, and even the immediate economic results—which reinforce the necessity for a more gradual process. *But the time has come when all concerned must make up their minds that they must move towards a major transformation of the kind indicated, unless they are willing to see the industry drift into a period of prolonged trouble and eventually shrink down to the size of a minor British industry.* The goal may take some time to reach, but, with a goal of this sort in view, the next steps can be taken on the right road to it.

A Concerted Programme Necessary

18. It is no use disguising the difficulties of that road. In fact it is at this point that we are brought most clearly up against the question stated in our introductory chapter—" How do we get from A to B ? " *But the magnitude of the difficulties should not be made a pretext for not facing them. Nor should the fact that no plan can be devised which is perfect or free from possibility of abuse be used as an argument for drifting along without any plan. The real question which must be faced by everyone who ventures to talk about cotton is this :—*

> *Taking into account all the facts of the situation, should there be a concerted programme for putting the whole industry on the right road or should matters be allowed to drift as after* 1918 *?*

We have no hesitation about our answer to that question. There must be a concerted programme and a recognition that the national interest is involved in a manner which, while it may justify a claim for special action by the Government, also puts upon all individual interests in the industry an obligation to collaborate in a joint effort to secure the maximum benefit for the industry as a whole.

And now is the time to make a start.

The one thing that must be done is that the unique opportunity of the short transition period of intensive demand should be used by the industry to get itself into shape to pay higher wages and to meet the difficult competitive conditions which lie ahead. The one thing that must be avoided is the enjoyment of this period as a fool's paradise of easy profits at the end of which the industry, and all those who rely on it for employment, may find themselves in worse difficulties even than those of the inter-war years. *The next few years are vital. The nation cannot afford to have them wasted.*

What Will Happen Without a Programme

19. It is possible to visualise many ways in which things may go wrong if there is no concerted programme and matters are allowed to drift. If, for example, all the spinning mills are reopened and they then try to outbid each other for the limited labour force which is available, the wage position may get into dangerous confusion. The danger chiefly to be feared is that *unofficial* wage rates may be pushed up* in a way which will weaken the arrangements for settling official rates and will, in effect, get wages up to a level which cannot be permanently maintained. It may be possible to pay very high wages for a time. Indeed, it most certainly will be, if prices are not controlled. Nothing worse could happen to the operatives than that they should be attracted back by wage rates for which the industry has provided no sure foundation in true commercial earnings. The greater the success of the present propaganda for attracting labour, the worse would be the ultimate blow. Moreover, to let things drift along this course might well lead to national disaster, since, however successful a full employment policy may be, it cannot guard against serious distress if a heavy shock falls on an industry like cotton, concentrated as it still is in one area.

20. Apart from the specific danger just noted, it is impossible to imagine that the industry can get into proper shape if nothing is done to counteract the effects of having a labour force, representing no more than 50 to 65 per cent. of what is required for full operation, spread about in such a way that no mill can operate to full capacity.

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* There are already signs of this kind of tendency at work.

21. Lastly, another potential difficulty must be mentioned. In the sort of gradual transition which we must envisage there may be mills working side by side, some on a double day shift and a 40-hour week, and others on a single shift 48-hour week with the workers getting the same basic weekly wage rate. Such conditions may lead to serious trouble unless the industry is following an orderly concerted programme which is well understood by, and commands the confidence of, the workers.

COMPLICATING FACTORS

22. It is much easier to reach the conclusion that a concerted policy is necessary than to settle the exact form which it should take and then embody that in a workable operational plan. There are many complicating factors which hamper or obstruct a straight approach to the problem.

23. One obvious thought is that the war concentration afforded a great chance to work out a plan of consolidation and re-equipment before the reopening of mills began. But, if that was an opportunity, it is idle now to speculate on how it could have been used, since, in the main, it has already been lost. Deconcentration had already gone too far when we started our review of the position. (The latest estimate which we have been able to get is that at the end of March the mills which had not yet obtained permission to re-start contained no more than about $3\frac{3}{4}$ million spindles.)

The following points must also be noted in this connection :—

(*a*) At the time of concentration a pledge was given by the Government that closed mills should be given all possible assistance to reopen.

(*b*) Selection for concentration was made on a geographical basis related to the needs of the munitions industries, and not primarily on any criterion of efficiency. The closed mills, therefore, included some standing high up in the order of efficiency.

(*c*) The human characteristics of the Lancashire people cannot be left out of account. There is said to be a substantial number of the older workers who, unless their own old mills are reopened, will not go back to employment in the cotton industry. If, therefore, the decision had been to keep a large number of mills closed, the result might have been a net loss of an appreciable number of workers who would otherwise have been available. While we recognise that the immediate need for the maximum possible volume of production is so urgent that no factor which may involve a loss of potential workers can be left out of account, we must enter a caveat that there is no reliable evidence as to the exact importance of this particular factor, and that it cannot be allowed permanently to dominate policy. It is mainly the older workers that are affected. In the long run the cost of production must become the decisive factor, and it will be impossible permanently to evade the necessity of consolidating production in a smaller number of mills. This is a matter on which fuller enquiry is necessary.

(*d*) Another complication is that, with the average counts now being spun, the determining factor for the potential output of yarn may be the cardroom capacity rather than the number of spindles. This consideration may have an important bearing on what is the best immediate policy in regard to the closing of mills. It is a matter which requires fuller investigation. Some temporary alleviation could be obtained if the cardroom could be worked on a double-shift

basis while some of the spindles remained on single shift. But this remedy has many complexities and in any case depends on labour being available. Fundamentally, the relative shortage of cardroom labour is, in our view, the most serious aspect of this particular problem. (This is an illustration of the lack of balance referred to in paragraph 10.)

24. We have mentioned these complicating points in order to make clear how difficult it would be now to deal with the position by an immediate decision to close a large proportion of the mills and concentrate production on the balance working with modern methods.

25. There are other reasons, too, why such a drastic operation would be neither practicable nor desirable.

Firstly: There is a large force of skilled mule-spinning operatives who cannot be expected suddenly to change over to other methods. The human factor must again be taken into account.

Secondly: The position as regards supply of machinery limits the rate at which re-equipment can be carried out.

Thirdly: A capital equipment programme for the textile industry will have to take its place among all the pressing demands for capital equipment for other industries, the total of which in the next few years is likely to be extremely great.

Fourthly: Even if, as a result of a special plan to boost the production of textile machinery, wholesale re-equipment in 1946 were possible, it would not be wise to have the whole of the Lancashire spinning industry equipped with "1946 model" plant.* We stand at the end of six war years during which it has been possible to do very little in the way of developing new designs. Many unknown possibilities of new technical developments lie ahead. This is not an argument for standing still. To wait for the best possible world means permanent stagnation. But it is an argument against wholesale immediate re-equipment.

Fifthly: The need for maintaining current production at the highest level possible must be taken into account. The industry must re-equip itself as it works, and avoid steps which might tend to make potential workers retire.

Sixthly: A complete plan to shape the industry according to ideas formed now as to what its future size will be implies a static conception which we could not accept and which in any case in the present uncertain conditions would be quite unwarranted.

A Flexible Evolution Required

26. The considerations mentioned force us to two conclusions:—

(*a*) That what is needed is some method which will give an element of elasticity—power to contract if necessary, without the human and economic suffering which characterised the inter-war period; but also power to expand to embrace the maximum opportunities, and

(*b*) That the finally desirable objective cannot be achieved by a single movement. There must be a continuing series of steps, the pace of which can be varied according to conditions and so adjusted that, at each stage, the best use is made of the resources which are

* An expert scientific witness has stated in evidence that in his opinion it would be extremely unwise for Lancashire to go in for wholesale re-equipment at this stage. Cf. Chapter IX.

available. *But the acceptance of these conclusions must not be allowed to blur the picture. The broad objectives of consolidation and modern equipment must be accepted as clear aims to be pursued with a sense of urgency. The process of "step by step" must not degenerate into "too little and too late."*

27. The argument up to this point may be summarised as follows* :—

(*a*) The industry must now prepare to work with a much smaller and higher-paid labour force. This creates a need for installing labour-saving machinery combined with improved methods of labour utilisation; this leads to the further need for considering a change to double day shift working as an economic necessity; and, if that is accepted, the total quantity of spindles required will be substantially reduced. The industry must in fact contemplate a development which will ultimately amount to an almost complete transformation.

(*b*) For many reasons this transformation will have to be carried out gradually.

(*c*) Factors in the immediate situation—(*e.g.*, competition for an inadequate labour force) and factors likely to arise during the period of transformation—(*e.g.*, the possibility of having some workers on double shift and others on single shift)—may lead to chaotic conditions unless there is an orderly concerted programme, well understood and commanding the confidence of the workers.

(*d*) The need for an orderly programme is reinforced by the situation as regards the supply of textile machinery. (The Government's programme for a balanced national investment policy further reinforces this need.)

(*e*) It is of most vital importance that the conditions which are likely to prevail for a short period (with demand greatly exceeding supply) should not lead to a false sense of security, but should be used as a special opportunity to get the industry into a strong position for the future.

(*f*) Since our terms of reference presuppose the continuance of private enterprise, the essence of the problem is to ensure an orderly programme and, at the same time, to leave the maximum possible latitude for individual initiative.

We turn from these conclusions to our recommendations.

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* The argument has been developed with reference to the spinning section; but the conclusions stated in this paragraph apply broadly to the industry as a whole. The special distinguishing factors in the case of the weaving and finishing sections will be dealt with in later paragraphs.

RECOMMENDATIONS

I. OPERATING METHODS

I (a). RE-EQUIPMENT AND CONSOLIDATION

28. We start with a series of recommendations which, although each is capable of individual application, are put forward as part of a connected plan of action. The primary objectives of this set of recommendations are the re-equipment of the industry with modern machinery to the extent required to fit in with the country's economic needs and the adjustment of its productive capacity to ensure efficient and economic operation.

They are designed :—

(i) To take advantage of the period of post-war transition when there will be a shortage of consumer goods and the price factor will be of secondary importance, in order to accumulate funds which will help to re-equip the industry on the right lines.

(ii) To create a balance between plant capacity and the available supply of labour, in order to avoid waste of expenditure on the replacement or modernisation of plant in excess of what can be staffed or of what will be required to supply the probable market demand. (The aim is both to achieve balance now and also to create a form of organisation with flexibility for adjusting itself to changing conditions in the future.)

(iii) To utilise the available resources for the supply of textile machinery to the best advantage—

(*a*) By giving the British textile machinery industry an assured programme of sales to the home market for the coming years on which to organise their production programmes.

(*b*) By facilitating (as a result of (*a*)) the most economical production of textile machinery and thus to reduce prices to the textile industry.

(*c*) By getting the machinery which is produced distributed in such a way as to achieve the maximum effect.

29. Inasmuch as any plan based on the retention of the principle of private enterprise must depend for its success on co-operation from all who will be concerned in operating it, an important feature in the presentation of this part of our proposals is that the various sections of the industry shall be given a definite period (we suggest three months) in which to consider how best they can be worked out in detail. We do not claim that our proposals are perfect in every detail, or free from difficulties in special cases. If the industry can put forward a constructive plan which will better achieve the main objectives, then by all means let it do so. *But we must leave our own views in no doubt. There must be some plan for, or positive assurance of, concerted action for achieving the objectives which we have stated, based on a recognition by all individual interests in the industry of an obligation to collaborate in joint action aimed at the maximum benefit for the industry as a whole.*

PRELIMINARY STEPS

30. We start with two recommendations for certain preliminary steps. We place these first because we consider it specially important that immediate decisions should be taken upon them. We recognise that on most of our recommendations the Government will require time for reflection before announcing its policy and, as just indicated, we ourselves propose that the Industry should be given three months to consider them. But on certain steps proposed in these first two recommendations* we consider it legitimate to urge that there should be no delay in initiating action at once, more especially as that will facilitate the early planning of practical measures to give effect to the other recommendations. We again urge the importance of speed in this whole matter and of the earliest possible removal of uncertainties affecting the industry.

RECOMMENDATION I.—A SURVEY OF EXISTING PLANT

A comprehensive survey should be undertaken immediately of the existing industrial plant and its suitability for modernisation.

31. For the proper fulfilment of the purposes stated in paragraph 28 the available material resources and finance must be used to the best advantage. The first necessity is to have much more accurate information than is available at present of the existing state of the industry's equipment so as to make it possible to judge at what points and in what way new expenditure could be most fruitfully applied. The Platt Mission recommended that investigations should be instituted without delay for a number of purposes including the following :—

(*a*) To make a comprehensive survey of existing industrial plant and its suitability for modernisation.

(*b*) To determine what measure of improvement is possible in existing equipment.

(*c*) To ascertain the requirements, in terms of new equipment, which will result from (*a*) and (*b*).

We endorse this recommendation and consider that, as an immediate measure, steps should be taken to inaugurate such investigations. We contemplate that the necessary information can be compiled partly by a survey of the condition of buildings, spacing, machinery, etc., and partly by collecting from every producing unit in the industry proposals for additions to, and alterations in, machinery and buildings which it would be prepared to undertake during the next five years. (We recognise that the second part of this recommendation, *i.e.*, the compiling of a comprehensive statement of the industry's needs, must in practice go hand in hand with the carrying out of the enquiry into textile machinery supplies, which is the subject of our next recommendation, for until individual firms know what are the probable delivery dates and prices of machinery they will not be able to prepare their plans on a realistic basis.)

* These are not the only two points to which this applies. We believe that immediate decisions can also be taken on several other points covered by some of the later recommendations.

RECOMMENDATION II.—AN ORDERED PROGRAMME FOR THE SUPPLY OF TEXTILE MACHINERY

(a) An independent investigation of the textile machinery industry (present position and future development possibilities) should be undertaken forthwith.

(b) On the basis of such investigation, together with a calculation of the cotton industry's combined requirements, an orderly programme should be arranged for the supply, over the next few years, of textile machinery at prices subject to independent scrutiny.

32. It is an essential condition for the satisfactory working of a re-equipment programme such as we contemplate that the new machinery should be available at prices which are reasonable. So long as any control is maintained in the national interest over selling prices in the cotton industry, it can reasonably be asked that textile machinery prices also should be regarded as a matter of national concern and subject to investigation and supervision.

33. We consider, moreover, that something more than a control of prices is necessary. *What is needed is an ordered programme of supply regulated according to the requirements of the industry as a whole and the national interest.* National production resources are limited, and national needs for modernising capital equipment and restocking shelves with consumer goods are very great. This makes it urgently necessary that the productive resources which are available should be put to the best use.

34. We have in Chapter VI reviewed the position in regard to machinery supply. The main impressions which influence our recommendations can be briefly summarised.

35. *Spinning Machinery.*—We have been forced in Chapter VI to comment on the unsatisfactory relations which exist between the spinning machinery manufacturers and the textile industry. It has been unnecessary for us to consider whether blame attaches to either side for this state of affairs. The important points are that it exists and that it is contrary to the interests of both industries that it should continue. Beyond this, we have formed the opinion that research and development work in the spinning machinery industry has not been on a scale adequate to maintain the industry's former leading position vis-a-vis other countries. Lastly we are forcibly impressed by the fact that the present position in the spinning machinery industry represents a very near approach to a complete monopoly in an extremely important industry. On that ground alone we consider that the industry should come under review, especially at this moment when it will be called upon to play a decisive part in a programme of considerable national significance.

36. *Weaving Machinery.*—The main point which stands out from our investigations is the inadequacy of the British makers of automatic looms to cope with the requirements of the British weaving industry. This inadequacy exists both in regard to the volume and type of available supplies. In this connection we must emphasise our strong conviction that the chances for the British cotton textile industry to achieve a progressive future and maintain a substantial export trade are largely dependent on its ability to take a lead in producing new qualities of fabric and in utilising new types of fibre. Clearly the power to take a leading role of this kind will be greatly strengthened if there

is a progressive British textile machinery industry working in close proximity to and collaboration with the British textile industry. The need applies to all classes of textile machinery, but it is specially urgent in the case of weaving machinery (including, as a very important factor, preparation machinery for weaving). There is a great deal of leeway to make up. Makers in other countries have for a long period spent large sums on research and covered the field with many patents. An intensive effort will now be required if a leading British industry is to be developed. Looking at British industrial prospects as a whole in the era which lies ahead, and the position as regards international balances of trade and exchange, we consider that the absence of an adequate British weaving machinery industry is a lacuna which must be filled. It is certainly one of the most important factors in the situation disclosed by our investigations. In order to rectify the position there is need for a special effort, undertaken with the same sense of urgency as was applied to the development of new types of war production. Government support will in our view be required and it may be necessary to attract to this country foreign technical experts. In all the circumstances we recommend that a searching review should be made of the position and of possible lines of action and that for this purpose the Government should forthwith convene a special conference to be attended by representatives of the Cotton Spinners and Manufacturers' Association, of the British weaving machinery manufacturers, of the rayon industry, and of the Shirley Institute, together with such experts with general engineering experience as the Government may select.

37. So far as concerns other types of textile machinery (winding machinery, etc.) the position is in many respects similar to that described for weaving machinery. We recommend a similar conference as a preliminary to any decisions on policy.

SUMMARY OF RECOMMENDATION II

38. With a view to obtaining—

(i) An ordered programme for the supply of textile machinery to modernise the cotton textile industry at the lowest possible prices, and

(ii) The development of an adequate and progressive British textile machinery industry,

we recommend the following measures :—

(*a*) On the basis of a survey of the present position of the kind proposed in paragraph 31 (Recommendation I) there should be drawn up a broad estimate of the total amount of new machinery likely to be required over a period of, say, five years.

(*b*) On the basis of this estimate a programme should be drawn up for placing contracts for home market supplies with the principal British textile machinery makers and, if necessary with other engineering firms capable of contributing to the programme, as well as for an import programme for such machinery as must be purchased abroad or possibly obtained from Germany and Japan on reparations account. The contract prices for supplies by British makers should be subject to investigation and control by the Government. If continuous production over a period of years can be assured, considerable reductions in price ought to be possible.

(*c*) The Government should arrange for an investigation to be made into the position of the spinning machinery industry.

(*d*) A plan should be prepared for the development of the British weaving machinery industry: As a preliminary to formulating such a plan the Government should call a representative conference. If found necessary, the Government should give financial support to the plan.

(*e*) A plan similar to that proposed under (*d*) should be drawn up for the makers of winding, beaming and other types of textile machinery. It should be preceded by a similar conference.

We strongly urge that decisions on points (*c*), (*d*) and (*e*) should be taken without delay.

39. Recommendations I and II are applicable to the whole industry. We turn next to three recommendations which are intended to afford the means for achieving the purposes stated in paragraph 28 and which are in the first place described with reference to the spinning section.

RECOMMENDATION III.—A RE-EQUIPMENT LEVY

A fund to aid re-equipment should be built up from a levy balanced by a corresponding increase in the controlled prices for yarn. The levy to remain in force for the period of controlled prices—say three years.

40. This proposal is concerned with the purpose stated in paragraph 28 (i). It is also designed—

(i) To help to counteract the special conditions (described in Chapter VI, paragraphs 13-15) which are at present tending to impede the normal commercial incentive to replace old by new plant.

(ii) To make available a fund, the allocations from which can be used to create a stimulus to the modernisation of equipment on lines conforming to the national interest.

41. It is possible to envisage a great number of schemes for giving effect to the ideas indicated above. We are convinced that, for administrative purposes, it is essential to have a scheme which is as simple as possible. Our recommendations accordingly are for a scheme on the following lines:—

(i) The plan to be in force for the period of controlled prices. (We envisage the necessity for this as likely to last for about three years and, in order that all concerned may know where they are, we think that there would be advantages in settling now that our proposals, if adopted, should be *regarded as a three years' programme.**)

(ii) The controlled prices to be increased over and above the figure which would normally be fixed by a sum of 1d. per lb. of 24's yarn. (This is to be regarded as the basic increase. The changes for finer or coarser counts of yarn could be worked out on a sliding scale to give a parity to the penny a lb. on 24's.)

(iii) A re-equipment levy to be charged on each operating mill at the rate of 3s. 9d. per spindle (mule equivalent) and to be paid in to a Central Re-equipment Fund.

(iv) Mills which have paid levies into the fund would be entitled to apply, for payments as explained below.

(*a*) Any mill which has installed new plant after September, 1939 or which installs new plant during the continuance of the

* The levy would operate for three years but all the money collected would not necessarily have to be spent in that period.

levy, would be entitled in each year to a rebate from the levy payable by it in that year for an amount representing 5 per cent. on the capital cost of such new plant.

(*b*) Any mill which is now undertaking or which proposes hereafter to undertake capital expenditure either for installing new plant, or respacing or modernising existing plant, or for improving buildings and amenities for its workers, will be entitled to submit an application to the Equipment Board (Recommendation XXIX) for a grant towards such expenditure.

(*c*) Grants under (*b*) would be made towards the cost of schemes for the purposes stated, and it is not intended that the *normal* grant to any firm should exceed the total amount which it had paid into the Central Fund by way of re-equipment levy. It is possible, however, that there might be unallotted balances which, before the Fund is wound up, might be used for *additional* grants.

Though there would be, as indicated above, a definite relation in normal cases between amounts paid in by way of levy and amounts that could be claimed as grants, we wish to make it clear that the levies are to be regarded as costs chargeable against the current working expenses of the firms concerned, and that the re-equipment fund is, according to our proposal, to be regarded as a Central Fund and not composed of sums belonging to or earmarked for individual concerns.

It is an essential part of our intention in making this recommendation that there should be no liability to Income Tax on grants made out of the Fund.

(*d*) In order to avoid any possibility of misunderstanding we must make it clear that this proposal in no way involves taking away from each unit the responsibility for deciding its own re-equipment programme. It is only if it seeks to benefit by a grant from the Re-equipment Fund that it must satisfy the Equipment Board as to the purposes for which it is to be spent, and our proposal in paragraph (*b*) above allows for a wide range of objects.

42. Our proposal for fixing the special increase in price at 1d. per lb. on 24's yarn is based on the calculation that the normal annual output per spindle of this count would be 50 lb. This would give 4s. 2d. per spindle in operation. As against this we propose that the levy should be fixed at 3s. 9d. per spindle, which is 90 per cent. of 4s. 2d. It will be seen from this that, so far as current profits are concerned, a mill working at 90 per cent. capacity will be in exactly the same position as it would be without the levy. If it can work at more than 90 per cent. capacity its current profit position will be better; if at less than 90 per cent. it will be worse. We consider that this result will exert pressure in the right direction, since, in our view, it is certainly not in the interest either of the industry or the nation that there should be a continuance of conditions in which large numbers of mills, each operating at much less than full capacity, are competing for an inadequate labour force. But it must also be appreciated that, even if a mill has to pay by way of levy an annual sum greater than that received as a result of the price increase, it will still be able to benefit from its payments by getting a grant from the Central Fund if it is ready to play its part in a re-equipment programme.

43. We appreciate that at the present moment, when, for the sake of keeping down the cost of living index, the Government is directly subsidising utility goods, there may appear to be *prima facie* objections to introducing measures which would increase prices.

In reply to such possible objections we put forward the following considerations :—

(*a*) An increase in yarn prices, such as we suggest, will have only a very small effect on the retail price of consumer goods (see Chapter VII).

(*b*) If it is desired to avoid a rise in retail prices the figures given in Chapter VII suggest that offsetting economies might well be made by reducing the margins allowed to wholesale and retail distributors.

(*c*) If these objections have any force at all they only apply to goods for sale in the home market.

44. The last-mentioned point suggests a possible variation on this recommendation. In view of the possible objections to raising home prices, we have considered the idea that, instead of balancing the re-equipment levy by a uniform increase in the controlled prices for all yarn or cloth produced, the prices for home production should be kept unchanged and that an additional profit should be taken on goods sold for export sufficient to provide substantial sums for re-equipment. *Prima facie* this idea has considerable attractions, but we understand that there may be serious administrative and other objections to its implementation.

If, on examination, it is found that these objections can be overcome, then we consider that the suggestion is worth consideration as a supplement to our main recommendation which might provide a means for reducing the amount of the price increase on goods for the home market, but which should in no way modify its basic purpose. We cannot regard a levy on export goods alone as more than supplementary to our proposal for a levy on all production, since the volume of exports is unlikely to be large enough to produce the sums which we desire to see raised. As to the basic purpose, that must remain unchanged, since it would be contrary to our whole conception that steps should now be taken to allow an extra margin of profit unless that margin is definitely reserved for purposes of re-equipping the industry.

45. Apart from the possible objections noted in paragraph 43, we fully recognise that there may be some cases of difficulty in the application or administration of a uniform and universal scheme such as we have proposed. There may, for example, be cases of individual mills which had, during the inter-war years, brought their equipment to a high standard of efficiency for their own special purpose. Our recommendation is certainly not exactly fitted to cases of this kind. On the other hand, such mills would get the benefit of the price increase as a balancing consideration for the levy, and, even if they do not require new plant, they are likely to have projects for capital expenditure falling within the range of purposes stated in paragraph 41 (iv) (*b*) towards which they would be entitled to apply for grants from the Re-equipment Fund. There will doubtless be other complications, but we believe that if discretion is allowed to the Equipment Board and if the Board is working on principles agreed with the Central Body for the industry which

is proposed later (Recommendation XXX), the practical difficulties will not be insurmountable. On broad grounds we feel that there should be wide support for the general principle of this recommendation which is that the next few years of shortage of goods, when the price factor is on the whole of minor account, should be used to build up a fund available for the re-equipment of the industry and administered in such a way as to give an incentive to re-equipment on sound lines.

RECOMMENDATION IV.—GROUPINGS OR AMALGAMATIONS

To ensure the orderly handling of the transitional problems, mills should work together in groups.

46. As a measure for ensuring the common action, elasticity, and ultimate consolidation which will be required, the spinning industry should be organised in groups with the dual object of:—

(i) creating units, each of which would be large enough to handle its own problems of re-equipment and consolidation ; and

(ii) reducing the number of separate units in the spinning industry so as to facilitate co-operation in a concerted policy for the industry as a whole.

In this sense and for this purpose we recommend groupings or amalgamations; but, as the latter word has become controversial, we desire to make our meaning clear.

We are not concerned in this recommendation with most of the issues which have been raised in previous discussions on amalgamations, since we are not recommending amalgamations for their own sake, but only for the special purposes explained above.* For these purposes the groupings need not necessarily be of great or uniform size, nor is it essential that they should take the form of complete financial amalgamations. We also recognise the value of vertical integration in suitable cases, and we consider that groupings of this kind should be encouraged. We have accordingly so worded our recommendation as to leave considerable elasticity for interpreting what could be regarded as satisfactory groupings. But, save perhaps in a few exceptional cases, we are convinced that effective results of the kind which we consider to be necessary will not be possible without joint action between several mills.

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* The following is a brief summary of our views on these issues. We consider that it can be of great advantage to have a certain number of units large enough to be able to carry the cost of scientific research and of employing highly qualified experts on various aspects of industrial enterprise. On the other hand, over-centralisation has dangers and, unless the direction is of the highest quality, mere size may be a disadvantage. It is also advantageous for an industry to have a sufficient number of individuals each carrying real and independent responsibility for the success of his own undertaking. This advantage might be lost if the whole industry were organised in a few very large amalgamations. There is, however, room for a very substantial degree of unification in the spinning and weaving sections before there can be any question of running into the danger of losing this advantage. The results of the amalgamations actually formed during the inter-war years must be interpreted in the light of the special circumstances in which each of them was brought into being. Sweeping conclusions are dangerous. But, broadly speaking, our view is that the industry is handicapped for dealing with the difficult problems which lie ahead by the multiplicity of units.

RECOMMENDATION V.—A SUPPLEMENTARY MEASURE TO AID CONSOLIDATION

As a supplementary measure which will help to restore balance, special provision should be made for immobilising a moderate proportion of existing spindles.

47. Recommendation IV has in view the long-term objective, and is designed to facilitate a process whereby each of the groups formed can, as consolidation becomes desirable, close down some of its mills and concentrate increased production in the others. This process will take time and will of course put a certain burden on each group for carrying the capital involved in the closed mills. For the sake of future competitive power it is important that the burden should not be excessive; but we are also concerned about the short-term position and the effect of the immediate labour shortage on the industry's ability to organise its operations efficiently. We consider, therefore, that, as a supplementary measure which may help to secure early results, as well as to reduce the ultimate burden on the industry, it is desirable to have a plan which will provide facilities for the immobilisation of a moderate proportion of existing plant.

Our recommendations are:—

(i) That a scheme should be worked out for the taking over of a certain number of mills. (As an indication of the intended scope of this proposal we contemplate that it should apply to mills containing up to about five million spindles or approximately 12½ per cent. of those now in place. We consider that this amount would substantially help towards a satisfactory ultimate condition without involving undue disturbance.)

(ii) That, subject to matters being so arranged that the proposal can be regarded as part of a comprehensive plan in the national interest, the Government should make some contribution to the cost. (See below, paragraph 61).

(iii) That, of the mills taken over, those which are suitable for modernisation and re-equipment should be regarded, not as permanently eliminated, but as held in reserve to be available for various purposes, *e.g.*, (*a*) for resale as units to the industry for future expansion, if that should prove desirable, or (*b*) for use for a special purpose explained in a later recommendation (Recommendation XXXI).

(iv) That, in the case of mills taken over which are not suitable for modernisation, the buildings should be disposed of for other purposes and the machinery either sold to operating mills (*e.g.*, cardroom machinery in particular) in exchange for old plant, or held in reserve for future sale if that should later prove desirable.

(v) That in view of the great importance of maintaining the maximum production of yarn at present this scheme should be so operated as not to involve any net loss of output. In particular, for the purpose of retaining the full existing labour supply, representatives of the employers and trade unions should arrange that any operatives displaced through a mill being closed under this recommendation should be offered situations at running mills of equal status to the situation which they occupied at the mill to be closed.

(vi) That, in the application of this recommendation, account should be taken of the social reactions, so that the closing down of mills should not be done in a way which would leave any areas short of employment for the local population.

48. This recommendation, since it may look like a redundancy scheme of the old type, is perhaps likely to attract the criticisms commonly made of such schemes. Since we agree that there would be a danger in doing anything which would create a precedent for claims by industrialists to be bought out at the cost of their industry or of the community on every occasion when their plant had become obsolete or surplus to requirements, we think it important to emphasise the special features in the present case which appear to us to justify our proposal. The position of the cotton industry is exceptional in many ways. It is an industry of national importance which, as pointed out in Part I, had suffered from external blows which it could neither guard against nor control. It had not recovered from the impact of these blows when the war came. Now there is a chance to restore its health, and it is in the national interest that this should be done. We are also influenced by the consideration that, when the concentration programme was started, a statement was made by the Government which was generally interpreted as a pledge that the closed works would not be prejudiced on reopening after the war. It is hardly possible to recreate the position as it might have been for such works if they had not been closed, but the chance of selling out at a fair compensation price might help in dealing with what might otherwise be hard cases. Although this consideration is not confined to the cotton industry, nevertheless it appears to us to strengthen the special ground first mentioned, particularly in view of the transformation of the labour situation in the cotton areas which makes the position of firms in this industry, and especially those which have been concentrated, peculiarly difficult.* Lastly, we must make it clear that we can only recommend this proposal if those who are ready to dispose of their mills are prepared to treat on a reasonable basis. Subject to this condition we believe that, if the situation is prudently handled, the carrying out of this recommendation may in practice involve little, if any, financial burden.

IMPLEMENTATION OF RECOMMENDATIONS III, IV AND V

49. (*a*) It follows from what we have already said that both the formation of groups under Recommendation IV and the selection of mills to be taken over under Recommendation V should, if possible, be settled on a voluntary basis. Further, as regards re-equipment, we wish to see the greatest possible latitude for plans to be worked out by each individual unit according to its own requirements. But the requirements of individual units must be fitted in together, and it is not inconsistent with what we have just said that we should at the same time urge most strongly the importance of collective action in regard to all the matters covered by Recommendations III, IV and V. If matters are left to the unco-ordinated decisions of individual mills acting alone there can be no assurance that the result will be the concerted and orderly development which we consider necessary. We hope that, when the realities of the situation are appreciated, there will be a voluntary movement in the industry to effect groupings, to offer mills for sale at reasonable prices and generally to devise methods for collective action. *It is in this hope that we*

* We envisage that the scheme we suggest may be of assistance to some concentrated mills, but we wish it to be clearly understood that we are *not* suggesting the refusal of permission to concentrated firms as such to re-open or any other form of discrimination against them.

recommend that the industry should be allowed a period of three months to consider our report and work out their proposals for the best practical methods for giving effect to our recommendations, or to submit alternative measures designed to achieve the same objectives

(*b*) We look to the Central Body for the industry proposed later (Recommendation XXX) as the main instrument for arranging collective action. Such a body should indeed be of great assistance in connection with all the matters referred to under (*a*). The actual arrangements, however, for taking over mills, for collecting the equipment levy and disbursing re-equipment grants, would, according to another of our recommendations, be handled by a smaller *ad hoc* body which we call the Equipment Board (Recommendation XXIX).

50. In formulating Recommendations III, IV and V we have, up to this point, written with reference to the spinning section. It is necessary now to interrupt the exposition of our general plan in order to describe its application to the other sections.

THE WEAVING SECTION

51. The problems and needs for future developments facing the weaving section to a great extent run on parallel lines to those described for the spinning section though, as pointed out in the next paragraph, there are some important differences. The dominating factor, however, in both cases is the same, *viz.* the need for improving machinery to increase production per man-hour, so as to support a higher level of earnings without loss of competitive power. This again leads to the need for considering a change to double day-shift working as an economic necessity. And, if that necessity is accepted, the further consequence again follows that the total amount of weaving machinery required will be substantially reduced. Therefore a planned and orderly programme of development should be envisaged, and, as recommended for the spinning section, this could undoubtedly be worked out in practice with the greatest flexibility and the least dislocation or waste, if groups could be formed large enough to handle their own programmes of re-equipment and consolidation.

52. The following distinguishing features about the weaving section must be noted:

(*a*) Weaving is still mainly carried on by small family concerns. This condition will make the formation of adequate-sized groups more difficult.

(*b*) In the phraseology explained in the footnote to paragraph 8 there has been a certain amount of " unbalanced redundancy " in the case of looms. But in regard to this matter there is now a special factor of uncertainty—the possible result of respacing. It is generally recognised that, in most weaving sheds, too many looms had been crowded into the available space. The more progressive firms are already carrying out respacing programmes and, as recorded in Chapter VI, a Committee appointed by the Chief Inspector of Factories has during recent months been engaged in a survey of the whole industry. We have been informed, just as our Report was going through the press, that recommendations have been agreed which, if they are implemented, are likely to involve a more drastic throwing out of looms than previously contemplated. As noted in Chapter VI, some of our witnesses expressed the view that a proper respacing programme will mean throwing out about 25 per cent. of the existing looms. But we have been told that the Factory Committee's recommendations might involve raising this figure to as much as 40 per cent. in some cases. The uncertainty on this matter makes

it difficult to forecast what additional measures of consolidation may be necessary and, indeed, it is impossible for us to say with any exactitude how the general principles of our recommendations should be translated into practical measures for the weaving section. What we strongly urge is that the recommendations of the Factory Committee should be considered at once and that whatever decisions are reached should be put into operation without delay.

(*c*) The major change in equipment which has to be considered for weaving, *viz.*: installing automatic instead of Lancashire looms, represents, as emphasised in the Platt Report, one of the biggest issues facing the textile industry. On the one hand this change shows the greatest potential saving in man-power requirements of any mechanical change in the whole industry; but, on the other hand, it involves some highly controversial questions. (See Chapter VI.) It is clear that the economic advantage of changing over to automatic looms decreases as the fineness of the weft yarn counts increases; but there is controversy as to the exact point at which the change would cease to be economic, and also as to the extent to which changes in methods of working (*e.g.* the more-looms system accompanied by larger weft packages, etc.) or adaptations of existing looms (*e.g.* additions of automatic shuttle-changing attachments) can meet the needs of the situation.

(*d*) The potential British production of new automatic machinery is relatively much smaller for weaving than for spinning. As has been shown in Chapter VI, the production of the main loom-making company is already booked up for the next five years. Unless special measures are taken to accelerate production, the conversion of the major part of weaving to automatic looms from British sources of production will take a great many years. This factor operates against the possibility of any immediate revolutionary change and makes the examination of the intermediate measures referred to under (*c*) more necessary.

(*e*) The weaving section is almost entirely dependent for its opportunities to work on the supply of yarns which it can get from the spinning section. At present the labour shortage in the weaving section is, in any case, not so acute as in spinning. Until, therefore, the supply of yarn is increased the urgency for progressive measures to increase production output per operative is not so pressing as it is in the case of spinning.

(*f*) Although, as stated under (*e*), the weaving section is mainly dependent on what can be spun in the spinning section, there is a certain supply of the raw material for weaving in the form of continuous filament rayon yarn. This makes the connection of the weaving section with the rayon industry of special importance and can give the Lancashire weavers opportunities for new outlets of expansion. This is a consideration reinforcing the need for technological progress in weaving.

53. It will be seen from Chapter VI that our Machinery Sub-Committee has reviewed the technical issues involved in some of the points referred to in the preceding paragraph, and we accept their opinion that sweeping generalisations are likely to be inaccurate, and that considerable elasticity should be allowed for devising the best plan in the circumstances for each particular unit. *Nevertheless we are clear that the weaving section must look forward to an ultimate goal involving change on a scale comparable to that envisaged (see paragraph* 16) *for the spinning section, and that the next steps should be taken as part of an ordered programme for advancing towards that goal.* Further, for the weaving as for the spinning section, the next few years of shortage of goods and sellers' markets should be utilised for building up funds for re-equipment. We

therefore recommend that there should be a plan on the lines of our Recommendations III, IV and V for the spinning section.

54. As to the amount of the re-equipment levy for weaving, we suggest that a standard basis for the price increase and the levy comparable to the rate proposed for spinning might be as follows :—

(*a*) A price increase of a farthing per square yard of utility cloth 3024 (selected as a normal cambric), and

(*b*) a levy of £9 per loom (of 40 inches reed space as standard).

Assuming a production of 9,600 yards per loom per annum, this price increase would give an additional return of £10 per loom. Therefore with 90 per cent. of the looms running in any shed the gain in price would balance the amount payable in levy. This proposal, accordingly, is on a par with that put forward for spinning.

55. As regards Recommendation IV, since the limit suggested for the spinning section was roughly 12½ per cent. of the spindles now in place, the same percentage might be taken for a balancing number of looms; but, because of the uncertainty which at present exists as to the effect of respacing regulations (*see* paragraph 52 (*b*)), we do not feel able to make a precise recommendation.

56. In view of the last-mentioned point and the other complicating factors referred to in paragraph 52 we feel that there are special reasons for giving the weaving section itself an opportunity to consider exactly how our broad recommendations could best be embodied in a practical plan. We accordingly recommend that the industry should be asked to put forward definite proposals within three months.

THE FINISHING SECTION

57. The case of the finishing section is in several respects different from that of the other two. In the first place there is not the same scope for improving P.M.H. by the introduction of modern machinery, and, to the extent that modernisation or re-equipment are called for, the cost appears likely to be much less than in the case of either the spinning or weaving sections.

Secondly, there is in the finishing section the most clear case of "unbalanced" redundancy in the sense that its capacity is much greater than could be required for handling the potential output of the other two sections working according to the existing methods of operation with a single shift 48-hour week. As a result, it suffered much in the inter-war years from internal price competition arising from surplus capacity.

58. The existence of this element of "unbalanced" redundancy has an important bearing on our practical proposals. If, under Recommendation V, there is to be a plan for purchasing and "putting into cold storage" a certain number of spindles and if, as also recommended, there is to be some assistance from public funds towards financing such a purchase, then it would clearly be equitable that there should be a similar measure of assistance towards buying up an amount of weaving and finishing capacity to balance the number of spindles (i.e., that the proportion of assistance from public funds should be the same in all three cases). But if, over and above the amount of capacity thus provided for, there is a quantity of unbalanced redundancy in either of the other two sections, which has to be eliminated, it should not qualify for direct Government assistance of this kind. In the case of the finishing section, the unbalanced redundancy is likely to represent far the greater part of its problem.

59. Whilst it is our view that the broad principles of our Recommendations III, IV and V for the spinning section should apply also to the finishing section, we consider that the associations in each of the main sections of the finishing trade, together with the large amalgamations existing in each of these sections, should be able greatly to facilitate the formulation of uniform policies. Taking this into account, together with the fact that the conditions described in paragraph 57 indicate that the main portion of its redundancy problem is peculiar to the finishing section itself, we think it appropriate that this section should be given an opportunity to take the responsibility for formulating plans for giving substantial effect to our Recommendations III, IV and V. We accordingly recommend that the finishing section should be given three months to formulate such plans.

THE DOUBLING SECTION

60. In the review of the three sections given above we have omitted the doubling section. This is an important section of the industry; but we have not been able to examine its position fully. It suffices to say that we consider that steps comparable to those which we have recommended in the case of spinning will have to be taken for doubling, and that this section must not be left out of the calculations. Its recently formed Association should be invited to consider our recommendations and submit its proposals within the three months indicated.

Financial Implications of Recommendations III, IV and V

61. Until preliminary results are available from the survey proposed in Recommendation I and until the reactions of the industry to the other recommendations are known, it is impossible to do more than give a very rough indication as to how the finance would work out. The lack of sure knowledge as to future machinery prices brings in another, and indeed a double element of uncertainty, since not only the cost of each unit of machinery, but also the number of units ordered, will depend to some extent on the price. These uncertainties must be taken into account. Beyond that, we must make it very clear that the figures which we give below must not be taken to represent anything like a precise programme which we recommend, but merely a foundation on which calculations can be made.

A. POSSIBLE YIELD FROM RE-EQUIPMENT LEVY

(i) *Spinning*

If mills containing 30 million (M.E.) spindles are kept running the annual value of the levy at 3s. 9d. per spindle would be	£5,625,000
giving a total for three years of	£16,875,000

(The figures can, of course, be varied according to what estimate is made of the number of mills running. If the mills which are kept open were to contain, on the average for three years, only 20 million spindles, then the total levy collected would be £11,250,000)

(ii) *Weaving*

If sheds containing 350,000 looms are kept running, then the annual levy at £9 per loom will be	£3,150,000
giving a total for three years of	£9,450,000

B. POSSIBLE COST OF RE-EQUIPMENT

(i) *Spinning*

A possible programme of consolidation and re-equipment over the next few years might be as follows:—

(Present position: Mule spindles—23 millions; ring spindles 10½ millions.)

First step—Keep immobilised (under Recommendation V) 5 million mule spindles.

Second step—Replace 9 million mule spindles by 3 million ring spindles.

Third step—Modernise 8 million of the existing ring spindles.

	£ million
Cost—	
Second step—at £4 per spindle on an average (including preparatory machinery, etc.)	12
Third step—at £2 per spindle	16
To this must be added improvements to buildings and all the other matters mentioned in Chapter VI, Section 4. This is impossible to estimate accurately, but a figure of £40,000 per mill for 250 mills would give	10
Total	38

Against this figure of £38 million there might be, according to the earlier calculations, £11 to £17 millions in the Re-equipment Fund.

(ii) *Weaving*

Allowing for throwing out looms on respacing, it may perhaps be estimated that the industry will start from a position of 350,000 looms.

The programme over the next years might be to replace 200,000 of these by 120,000 automatics, working double day shifts.

	£ million
120,000 automatic looms at £160 would cost	19·2
Building improvements, etc., might cost another ...	10·0
Total	£29·2

Against this total of £29·2 million there might be, as shown above, £9·45 million in the Re-equipment Fund.

If, as these figures suggest, the burden of capital charges, both in spinning and weaving, could by this means be lightened by anything like 30 to 40 per cent., this would greatly increase the industry's competitive power in the future.

C. COST OF RECOMMENDATION V

We refrain from any attempt to estimate the possible cost of carrying out this recommendation: that will, of course, depend upon the prices at which mills, etc. can be taken over and on what can be obtained on the realisation of such buildings and machinery as can be disposed of. Unless old mills and looms are available at reasonable prices our recommendation would require

reconsideration. It seems to us, however, clear that if this plant is available at reasonable prices, and if the Government agrees to contribute a portion, say, half of the cost, the burden on the industry of a special levy to find the balance would be one which could cause no serious embarrassment. The half payable by the industry might indeed be provided from the Re-equipment Fund. This is a question which, if our general recommendations are accepted, might well be left to be settled according to the views of the industry.

D. Doubling and Finishing

We do not feel able to give any indication of costs in relation to the doubling section or the finishing industry. As explained in earlier paragraphs, we consider that proposals should be worked out by the sections concerned in the light of our recommendations.

Possibility of additional Redundancy Schemes

62. We must add that, according to the representations made to us, we understand that because of the relatively greater proportion of unbalanced redundancy in the finishing section, that section will wish to put forward more extensive schemes than would be involved in purchasing plant to balance the spinning capacity covered by our Recommendation V. In stating our recommendations we do not in any way wish to limit the extent of plans which any section of the industry may wish to put forward. According to our recommendations, however, if there were to be any grant from Government funds to the finishing section it should not exceed the parity equivalent of the grant recommended for the spinning section. Apart from that any scheme submitted by any section should be considered on its merits.

RECOMMENDATION VI.—LOAN FACILITIES TO FINANCE RE-EQUIPMENT AND CONSOLIDATION

Special facilities for raising loans at the lowest possible rate of interest should be made available to finance projects forming part of a concerted Re-equipment and Consolidation Programme.

63. As a supplement to the recommendations made above, we consider it desirable that there should be favourable facilities for raising capital. The re-equipment levy will only build up funds gradually and will, according to our proposals, only remain in force for three years. It is clear from the calculations given above that firms which are embarking on substantial programmes of re-equipment may not be able to cover the whole cost by grants from the re-equipment fund. We accordingly recommend that facilities should be made available for the industry to raise capital at low rates of interest to finance approved grouping and re-equipment schemes. We consider that advances for these purposes would be suitable to benefit by the provisions for Government guarantees under the Borrowing (Control and Guarantees) Bill. It would also appear that they represent the type of project for the encouragement of which the two new industrial finance corporations* were set up. Although it is an essential part of our purpose that new money should be used for re-equipment, we consider that in approved cases a part of the new

* The Industrial and Commercial Finance Corporation (for small and middling sized concerns) and the Finance Corporation for Industry (for larger concerns).

capital might be used towards buying out mills coming into grouping schemes or to assist any section of the industry in dealing with that part of redundancy which is not covered by Recommendation IV.

RECOMMENDATION VII.—A MILL WITH MODERN AMENITIES IN EACH IMPORTANT CENTRE

Special priority in allocation of building materials, etc., should be given so that there may be at least one completely modernised mill or weaving shed in each important centre.

64. Before leaving our proposals for an ordered programme of re-equipment and turning to other matters, there is one subsidiary recommendation which we wish to put forward.

It has been represented to us that it would help recruitment if there were available in each important centre of the industry at least one unit equipped according to the best modern standards in the way of spacing, lighting, amenities, etc. If such a unit were open for visits by juveniles and others they would have the opportunity to see what the working conditions in a modernised cotton industry will be. In view of the present shortage of building materials, labour, etc., we recommend that special steps should be taken to see that in the allocation of materials priority is given for completely re-equipping at least one unit in each important centre so as to make it possible without delay to have a demonstration unit available in the chosen localities. These units would according to our intention remain in private ownership. The selection of particular units for this purpose could be made on the recommendation of the central body for the industry.

I (b). THE BEST UTILISATION OF MACHINERY

65. In our consideration of what is required to achieve the maximum operating efficiency we have been dealing up to this point with recommendations aimed at encouraging the installation of first-class modern equipment. But that alone is not enough. The equipment must be *rightly used.*

There are two main requirements for this :—

(i) Proper production planning.

(ii) The best utilisation of the labour force.

Production Planning

66. If full value is to be obtained from costly new equipment it must be fully utilised. This involves many points. The question of double-shift working has already been referred to, but, apart from the number of hours per week for which the plant as a whole is kept running, it is vitally important that as nearly as possible 100 per cent. of it is kept running all the working hours. This means having adequate reserves of labour to take the place of casual vacancies—a question which has to be considered in connection with the second requirement.

Another important requisite is a close collaboration between the producing units and the marketing agencies so that the latter feed the former with orders facilitating the greatest possible continuity of production. This question has been reviewed in Chapter VII and recommendations are included in later paragraphs dealing with merchanting and distribution.

RECOMMENDATION VIII.—EXPERIMENTS IN LABOUR UTILISATION

Experiments in methods of labour utilisation of the kind recommended in the Platt Report should be organised on a more comprehensive basis and pushed forward with a greater sense of urgency. But these methods must not be regarded as a substitute for installing the machinery most suitable for each operation.

67. The need for improved methods in the "deployment of labour" was strongly emphasised in the Platt Report. We agree with their general views. We must add here that good results depend not only on having the skill to devise the best methods, but on the establishment of relations of collaboration and mutual confidence between employers and wage earners. We have at many points stressed our view that this is the most important of all the conditions for a successful and prosperous industry. This is dealt with more fully in our recommendations under the heading of "The Human Factor."

At this stage, in order to show our appreciation of the connection between the various parts, we confine ourselves to the brief statement that there is an urgent need for greater flexibility and a greater readiness to try out new methods in the deployment or utilisation of labour. In view of the present shortage of labour, of the time which must elapse before the industry can be fully converted of the most modern labour-saving equipment, and lastly of the urgent national need for maximum production, no possible opportunity must be neglected nor discovering and adopting means which, without increasing the work load, will increase the effective output of each operative working with existing machinery.

One of the most important recommendations of the Platt Mission was that preliminary investigations should be instituted without delay to try out new methods of mill staffing and measure effects on machine and operative efficiency*. Too little has been done to implement this recommendation. Experiments of the kind indicated in the Platt Report should be organised on a more comprehensve basis and pressed forward with a greater sense of urgency. But we must again emphasise that developments on these lines must not be regarded as a substitute for, or pretext for delaying, the installation of the mechanical equipment most suitable for each operation.

I (c). OTHER CONDITIONS FOR OPERATING EFFICIENCY

RECOMMENDATION IX (1).—COST RECORDS AND ACCOUNTS

Uniform methods of cost-accounting and preparation of financial accounts should be introduced.

68. If the industry is to develop maximum efficiency it must know what it is doing. There has been considerable ignorance hitherto among producers of the cost structure of the industry. *There is a clear necessity for devising*

* Platt Report, p. 42.

the best practicable system, and for achieving uniformity throughout the various sections of the industry, both in

(*a*) *cost accounting and the keeping of cost and production records;*

(*b*) *compiling profit and loss accounts, and balance sheets.*

To inaugurate special studies on these subjects should be among the first duties of the Central Body for the industry proposed in Recommendation XXX. According to that recommendation, the Central Body will have powers to call for returns of various kinds in a prescribed form, and we believe that, through the exercise of such powers and the consequent need for preparing uniform returns, uniformity in accounting methods will eventually be secured. We do not minimise the difficulties of achieving a satisfactory uniform system but we believe it to be possible. The industry should recognise its own vital interest in this matter. It is highly probable that in the conditions which lie ahead questions may arise which cannot be settled without a knowledge of what are fair costs of production with reasonable standards of efficiency. None of these questions can be properly settled without much more comprehensive records of costs than have hitherto been available. In calling for returns from the smaller units, it will be necessary to take account of staff limitations; but we think it should be possible to devise a system which, within a uniform framework, would provide for progressive stages of elaboration under various headings, to be introduced according to the size of the firm.

RECOMMENDATION IX (2)—PUBLICITY

There should be publicity of financial results in the case of all undertakings which employ labour on an appreciable scale.

69. A proper system for recording financial results has another value. We refer at many points of this report to the vital need for collaboration between workers' representatives and employers in order to achieve the best possible production results. Such collaboration cannot rest on any sure foundation unless the workers' representatives are given a chance of knowing how commercial results are working out. This must be a particularly important element in creating mutual confidence as a basis for trying out methods of labour deployment, etc. As a supplement to Recommendation IX (1) we recommend that methods appropriate to each class of business undertaking or industry should be prescribed for preparing profit and loss accounts and balance sheets and that there should be compulsory publication of such accounts for all employers of labour in numbers above a prescribed minimum (including private companies, partnerships or individuals). We recognise that this recommendation involves a general principle the application of which could not well be limited only to the cotton industry. At the same time we are impressed with its great importance in the special conditions of that industry.

70. In support of the foregoing recommendations we record our view that those conducting private enterprise must recognise that in employing substantial numbers of wage-earners they are undertaking a public responsibility. This justifies regulations prescribing publicity as regards the financial results of the businesses in which such wage-earners are employed.

I (d).—EFFICIENCY AND ECONOMY IN MARKETING AND DISTRIBUTION

71. Here we come to what is perhaps the most important part of the problem, so far as concerns commercial success.

We have reviewed the system of distribution in Chapter VII. As a preface to our recommendations what we particularly desire now to emphasise is the exceptional nature of the opportunities offered by the conditions which prevail to-day. In the first place the period of sellers' markets which lies immediately ahead affords a specially favourable chance to try out new methods and to build up, in a spirit of general co-operation, a technique which will correct the weaknesses of the past and be adapted to the difficult conditions of the future. Secondly, in this period the producers, in striking contrast to the position in which they found themselves before the war, will clearly be well placed to take the initiative with the merchants.*

72. It is in the light of these considerations that the main lines of our recommendations have been evolved.

There are two main necessities :—

1st : *A closer link-up between production, distribution and ultimate consumer demand for which the main initiative must come from the producers' side. It is they who must project their interest forward.*

2nd : *The application of scientific method to a study of the potential market outlets and of the productive capacity of the industry in relation thereto.*

Without in any way failing to recognise the value and, indeed, indispensability of the individual merchant or of the unique qualities of skill, experience and market judgment which the best Manchester merchants possess, we consider it to be absolutely clear that the time has passed when the industry can safely rely only on the opinion of the individual or on a number of disconnected individual opinions. These must be supplemented by, and seen against, a background of comprehensive objective surveys, on the one hand, of markets (including all the factors affecting them) and, on the other hand, of the production potentialities (both in quality and quantity) of the industry.

RECOMMENDATION X.—A CO-OPERATIVE MARKETING COMPANY FOR THE INDUSTRY

The producing sections of the industry should join together in establishing a new Central Marketing Company, as an undertaking to supplement the existing system for handling their products. The merchants and merchant converters should join as shareholders in this undertaking. It should replace British Overseas Cottons Ltd.

73. In order to meet the first of the two " main necessities " stated in paragraph 72 we put forward two lines of action.

(*a*) We suggest that manufacturers should be encouraged to make arrangements with merchants for the marketing of a part or the whole of their products so as to maintain the utmost continuity of production. (*b*) We believe that something more will be valuable, and in order to provide an

* In fairness to the merchants we must record our impression that they have been showing great willingness to give the producers the full advantage of this position.

alternative opportunity for the producing interests to promote the sale of their goods where individual arrangements of the kind referred to under (*a*) are either impracticable or difficult, we recommend that *the producing sections should join together in establishing a co-operative undertaking for handling their products, in which we trust that merchant converters and merchants would also collaborate.*

For this purpose we propose that a central selling agency should be established which should replace B.O.C. and carry on its best features in a new Central Marketing Company.

In regard to this Central Marketing Company (which we shall refer to hereafter as the C.M.C.) the following points should be made clear.

(i) It is to be regarded as complementary to the existing merchants, etc., not as a substitute for them.

(ii) Its ordinary share capital should be taken up by the firms engaged in the industry. It is to be hoped that there would be a universal response and that share capital would be allocated on some agreed quota basis. We hope also that merchant firms would participate as shareholders. We refrain from making precise proposals as to the possible methods for financing the C.M.C. We believe, however, that there are various ways in which this could be arranged without involving any serious burden on the individual members.

(iii) The C.M.C. should conduct its business on a commercial basis without any form of subsidy or privilege.*

(iv) A main object of the C.M.C. should be to secure bulk and continuous running for any member who desires to utilise its services and in particular it should act as a pooling agency for the assembly of small orders. As its operations develop it might well be able to assist in promoting vertical arrangements between groups where such possibilities had not previously either been envisaged or thought feasible. In this way it would itself become not so much another horizontal element in the structure of the industry, as a medium for expansion of that vertical co-operation which all the evidence of our enquiries has shown to be so desirable.

(v) In stating above that the C.M.C. should operate on a commercial basis we do not imply that its objective should be to distribute high profits to its shareholders. It should aim at earning normal interest charges on the capital employed with a fair margin, but the margin should be regarded as available for various kinds of work, carried out, not with a view to immediate profit, but in the wider interests of the members who would, we hope, represent the industry as a whole.

(vi) As examples of the kind of work which we have in mind we mention the following :—

(*a*) carrying out specific market enquiries (as a supplement to the general market research referred to in the next Recommendation) ;

(*b*) trying out pilot sales experiments in various markets ;

(*c*) studying questions of standards, etc.

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* We have in mind the reservation made by the merchants' representatives on the Post-War Committee of the Cotton Board that, if B.O.C. were to be continued the necessary finances should be provided voluntarily and should not be derived from any compulsory levies or taxes. We consider this to be a sound and reasonable contention.

(vii) The Board should be appointed by the shareholders; but the selection of individuals for directorships could perhaps most suitably be arranged by the official associations for each section. We specially emphasise that they should be chosen primarily for their ability and experience. We attach great importance to the Board including representatives of the wage-earners and of the Central Body for the whole industry (Recommendation XXX), and we hope that persons recommended by the Trade Unions would be co-opted.

74. We have set out the foregoing points in order to convey a clear idea of the intention of our recommendation, but the industry, as shareholders in the Company, would of course have power to settle the precise form of the arrangements. It is important that this matter should be considered by the industry with the least possible delay in view of the urgent need for positive action. *In conclusion, we must emphasise the great weight we attach to the establishment of a Central Marketing Company, since we believe that through such a body the producers will be able to attain that position which we think they should occupy and which should be of key importance.*

We trust that all sections of producers and merchants will give their very early attention to this recommendation.

RECOMMENDATION XI.—MARKET RESEARCH

A comprehensive and systematic programme for market research should be organised by the Central Body for the industry. The balance of about £350,000 accumulated by the Board of Trade from levies raised for B.O.C. should be allocated as a foundation grant for a programme specially directed to export markets. The cotton industry should maintain contact with other export industries and with the B.E.T.R.O.

75. In Chapter VII we have emphasised the importance of systematic market research (both home and export) in order to provide a background to the ideas and experience of individual merchants who are in contact with particular channels in various markets. Market research, if it is to be valuable for this purpose, cannot be conducted in a piece-meal or desultory way. The surveys involved require skilled personnel and must be undertaken continuously and on a broad basis. There is a great shortage of personnel with the requisite training. Substantial expenditure will be required to build up a staff and conduct work on an adequate scale, and there must be determination to go through with the task even if it does not show any immediate return.

76. We understand that a sum of about £350,000 is now held by the Board of Trade representing the unexpended balance of funds raised by levies in the first period of the operation of B.O.C.

We recommend that *this sum should now be transferred to the Central Body for the cotton industry to be used as a fund to finance a programme of market research specially directed to the development of export markets.*

77. In this connection, since we consider it likely to be advantageous for the cotton industry to keep in touch with other important British exporting industries, we suggest that the industry should, through its Central Body, consider association with the newly formed British Export Trade Research Organisation.

RECOMMENDATION XII.—MEASURES TO ENSURE CONSULTATION BETWEEN ALL PARTIES INTERESTED IN HANDLING THE PRODUCTS OF THE COTTON INDUSTRY

The Central Body for the industry should organise regular conferences between the producers and those who have knowledge of consumer requirements in various ways.

78. In the preceding paragraphs we have emphasised that knowledge gained from research into potential market outlets must be related to the industry's productive capacity. By this we mean that such knowledge should be applied in enabling the industry (*a*) to make the most of its distinctive abilities and (*b*) to plan its production economically. We consider that there is need for more "vertical" consultation on a number of matters, e.g., selection of the most suitable qualities of cloth, grades and counts of yarn, quality of finish, etc., for bulk production and standardisation. We recognise that much valuable work has been done by the Standards Committee of the Cotton Board; but we wish to urge that special arrangements should now be made for organised consultation between the producing sections and those who have a close knowledge of consumer requirements, e.g., representatives of consumer organisations, retailers and wholesalers of clothing, household or apparel textiles, etc., and large consuming institutions, together with representatives of scientific organisations such as the Shirley Institute, the proposed new British Rayon Research Association, the British Standards Institution, the British Launderers' Research Association, etc. Representatives of the Government Departments concerned with the purchasing of textiles and public authorities should also be invited to attend. These bodies place orders for large quantities of various kinds of textiles. Their consumption is likely to be considerably higher than before the war, and their demands could be fitted in to the production programme of the industry in such a way as to aid its efficiency and economy in manufacturing for normal competitive markets. No opportunity should be lost of standardisation or of achieving a profitable combination between these demands and other orders. The experience of the Services, etc., as "users" can also be of great value.

79. We do not attempt to prescribe precisely how conferences for all these representatives should be organised, since this is a matter which should be worked out by the Central Body for the industry; but we are convinced that, if systematic conferences are organised and attended by the best practical men available, there will gradually be built up a body of knowledge and a method of co-operation which can be of the greatest value to the industry.

RECOMMENDATION XIII.—A CONTINUOUS STUDY OF THE DISTRIBUTION OF THE COTTON INDUSTRY'S PRODUCTS

A continuing and detailed Census of Distribution should be maintained.

80. Our recommendations for a Central Marketing Company, for a special programme of market research, and for periodical "vertical" conferences between producing representatives and those who understand consumer demand, need to be completed by having methods for the continuous study of what is happening to the products of the cotton industry (trends of production

and its costs, trends of consumer demand, trends of distribution and its costs). It must be remembered that the cotton industry has to face two great changes :—

1st : that caused by the development of textile industries in other countries, which means that to an increasing extent the opportunity for exports will arise in cases where gaps can be found in local production which the special qualities of Lancashire products can fill.

2nd : that caused by the increase in the relative importance of the home market, which means that more attention than has been normal hitherto should be given to the influences of home demand.

One of the major questions for consideration is whether the home market, combined with the proportion of the export market which can be regarded as fairly well assured to Lancashire, can give the industry "*a basic load*" on which to work with a reasonable margin of profit, leaving it free to seek by more aggressive methods to capture additional trade. The implications of the two important changes to which we have referred above demand the most careful study. Production policy should be determined by the results. The study, moreover, must be a continuing process and a system is needed for the collection of the necessary information not only by special market surveys but by something like a continuing Census of Distribution.

This is a matter which must be undertaken by the Central Body for the industry.

I (e). SCIENCE AND INDUSTRIAL PROGRESS

81. In Chapter IX we have stated that the industry, if it is to take a lead in progress must get into gear with science in a wide sense. We have emphasised that it must :—

(i) be ready to make use of scientific method in the study of its practical problems ;

(ii) encourage the pursuit of scientific knowledge for its own sake in the Universities and elsewhere, and

(iii) be able to apply scientific knowledge to the improvement of its own production methods.

As matters falling under the first of these heads, we have mentioned market research, and industrial and labour research, and these are the subjects of separate recommendations (Recommendations XI and XX). Although no hard and fast line can be drawn, " operational research " of this kind is to be distinguished from " scientific research " as ordinarily understood, and requires separate organisations for its pursuit ; but we have emphasised that these organisations ought in all their work to keep in close contact with those responsible for scientific research, since at many points their work will overlap.

Scientific research was dealt with in Chapter IX, and the main conclusions may for convenience be restated here in order to complete our list of recommendations.

The practical steps to be taken need to be considered under three main heads, and our recommendations under these heads are set out below.

RECOMMENDATION XIV.—THE SUPPLY OF QUALIFIED MEN

The industry should support active research schools at the Universities and Technical Colleges. Other steps, including a special scheme of Industrial Fellowships, are recommended.

82. (i) The starting point must be *the Universities and Technical Colleges* which have the function of training in research methods those who will ultimately enter research laboratories in the industry. The cotton textile industry should encourage and assist financially and otherwise the maintenance, in universities and other teaching institutions of university rank, of strong and active research schools dealing with textile science and textile technology and the fundamental scientific background of the textile industries. In these institutions research work should be pursued in complete freedom. The training of undergraduate and post-graduate students should be undertaken and the appropriate research schools should accept selected science graduates from other schools of science and train them in textile research for periods of one to three years. Every encouragement should be given to firms in the industry to make contact with such institutions for their mutual benefit.

(ii) The work of the *professional institutions and scientific societies* should be encouraged and assisted; particularly in making surveys and reviews of textile knowledge and organising symposia for the discussion of textile problems from which suggestions for further investigations may emerge.

(iii) Consideration should be given to the establishment of *Industrial Research Fellowships and Associateships*, the holders of which would be available to individual firms in the industry for investigating specific problems. A sketch of a possible plan for such fellowships is attached as Annexe I to Part II*.

(iv) Firms should make every endeavour to encourage and permit the publication of original research work in *scientific journals*. It would be a great encouragement to the industrial research worker if the universities were prepared, in the award of their higher degrees, to give wider recognition than at present to work done outside the university walls by their own graduates.

(v) It is suggested that the Ministry of Labour should regard genuine training within the universities in textile science and related branches of pure science as a form of national service and relax the present restrictions which operate to the grave detriment of our greatest industry.

RECOMMENDATION XV.—THE CO-ORDINATION OF RESEARCH WORK AFFECTING THE INDUSTRY

In order to co-ordinate research work various steps are recommended, including (i) *the establishment of a Textile Research Advisory Council for all textile industries,* (ii) *a review of the experience over the whole range of industry of the results attained hitherto by Joint Industrial Research Associations, and* (iii) *a great increase in the total research effort of the industry.*

83. (i) In view of the unification of textile science brought about by scientific progress during the past 25 years there is a clear need for a co-ordinating body. Such a body might be a Textile Research Advisory Council

* Page 272

covering the entire field of textiles, which could act in an advisory capacity to review, expand and co-ordinate research and development throughout the textile industries. More detailed proposals for such a council are contained in Annexe II to Part II*.

(ii) The existing (and foreshadowed) trade research associations for the textile industry have important functions to perform as central research institutes. These functions differ from those of research departments of individual firms within the industry. The precise nature and scope of the functions of the former, how they can be best exercised, by what means their exercise can be made of the fullest possible value to the industry, and how they should be correlated with the functions of the research departments of individual firms are questions of a significance which affects trade research associations in all industries. We suggest that they are questions to which the right answers are not yet clear and that it will be useful to review the experience of the whole movement of Joint Research Associations started at the end of the last war under the Department of Scientific and Industrial Research. We hope that the Committee recently appointed by the Lord President of the Council may throw some light on these questions. So far as the Textile Industry is concerned we believe that the correlation between the work of the Central Research Institutions and the work of individual firms would be facilitated by the operation of the proposed Textile Research Advisory Council.

(iii) We consider that, in order to maintain the position of the British textile industries and meet future competition, primary needs in relation to research for the textile industries are:—

(*a*) A great increase in the total research effort of the industry by active participation in research on the part of a larger number of individual firms.

(*b*) Closer co-ordination of research effort between the different sections of the industry in the drive for new developments.

Every individual firm which is large enough should establish a research unit for the investigation of its own ideas and the development of new processes and new products. Ingenuity and enterprise should be directed towards new inventions.

RECOMMENDATION XVI.—THE APPLICATION OF SCIENTIFIC KNOWLEDGE IN INDUSTRIAL PRACTICE

The greatest immediate practical need for British industry is to secure more effective application of scientific knowledge in industrial practice. Various steps are recommended.

84. (i) There is a clear need for better, and in particular speedier, methods of translating research results to large scale production. How to achieve this is one of the most important practical questions of the present time. It deserves concentrated attention in all industries. Perhaps the most important single measure would be to increase the proportion of men with good scientific training in the employment of industry. The industry must learn how to use such men rightly. They should not be regarded solely as specialists. As stated in an earlier paragraph, they should be given opportunities of advancement to the highest administrative posts if their general qualifications are suitable.

(ii) The wider dissemination and more intensive application of results could be furthered by the more frequent use of conferences organised by the Shirley Institute, the Textile Institute, the Society of Dyers and Colourists or by other learned societies at which representatives from within the industry would be

* Page 273.

invited to hear of the latest trends of scientific thought and technical development and to submit problems and questions. Such conferences might be arranged for different classes of people at different times, e.g., directors, managers, foremen.

85. This suggestion again brings us back to the point already made. To be fully effective such dissemination calls for a much larger number of graduates engaged within the industry, both amongst directors and staff, so that the implications of research may be adequately understood. This can be readily implemented in the large firms, but there are clearly difficulties in the case of the small firms. It seems probable that considerable benefits would arise in this direction from a higher degree of integration or grouping together of the smaller firms.

II. THE HUMAN FACTOR

86. The conditions affecting employment in the industry and the relations between employers and wage earners represent, as we have already stressed, the most important of all the fundamental factors. Full operating efficiency is entirely dependent on this. The main points for consideration under this heading have been set out in paragraph 6. All these points must be borne in mind. In the following paragraphs we refer to matters which lead up to specific recommendations.

II (a). MANAGEMENT

RECOMMENDATION XVII.—MANAGERIAL AND EXPERT STAFF

There should be a higher proportion of young men in leading positions, more men both of broad industrial experience and high technical qualifications, and better opportunities for such men.

87. The quality of management is all-important. Special attention should be paid to the observations of the Platt Mission's Report quoted in Chapter V. While agreeing with their recognition of the merits characterising British management, and while in no way advocating slavish imitation of American methods, we consider that now is the occasion (*a*) to bring young men forward and (*b*) to increase the proportion of highly trained scientists and technicians, just when the industry is reshaping itself after the war to face new conditions in an era of unparalleled scientific advance.

We therefore record the following views and recommendations :—

(*a*) The industry should have a larger proportion of young men in leading positions. This applies not only to the direction of individual businesses but also to the leading positions in the various associations. All associations should review their own position in this matter. *The lead in the next years must be taken by men whose interest lies ten to twenty years ahead.*

(*b*) Special efforts are needed to bring in men who have taken high scientific or technical degrees and to give such men opportunities for advancement on the management side. We recommend this as a long-term policy the benefits of which will take time to develop.

(*c*) It would be advantageous to bring in some men who have experience of modern methods as developed in other British industries.

(*d*) Special attention should be given to the Platt Mission's recommendation that more facilities should be given for young men undergoing full-time college training in textiles to spend their vacations in mills.

RECOMMENDATION XVIII.—TRAINING FOR ADMINISTRATORS AND MANAGERS

More systematic arrangements are required for training in the principles of management and for broadening the outlook on administrative problems of those holding positions of responsibility. Consideration should be given to establishing an Administrative Staff College for Lancashire.

88. The Cotton Industry generally has suffered from isolation. In particular those running the smaller undertakings lack opportunities for learning

about methods which are being developed in the newer industries. There are cases where men get into managerial positions without the necessary training in the principles of management. There is need for a greater appreciation of the importance of effective management at all levels, and for more knowledge of the experience which has been gained in various industries or individual firms as to the best management practice. We note with appreciation that the Government have promised their support for a British Institute of Management. We believe that such an institute will be of value and that the cotton industry will benefit by supporting it. But the industry should also take its own steps in this matter.

We recommend that the Central Body for the industry should direct its early attention

(*a*) to considering arrangements to provide for instruction in the principles of management ;

(*b*) to considering, in collaboration with the Trade Unions, Local Government bodies and other industries operating in the area, the provision of facilities for persons who have reached a certain stage in their careers to attend an Administrative Staff College. We suggest that Lancashire might well promote its own staff college or, pending this, that the cotton industry should consider giving support to the plan recently inaugurated by an influential group of persons representing industry, local government, education, commerce and distribution for the establishment of an Administrative Staff College designed to " bring together men and women of executive responsibility from industry and commerce, the Trade Unions and central and local Government to study the common principles that underlie effective administration."*

II (b). OPERATIVES

89. Our terms of reference specifically excluded from the scope of our enquiry :—

(i) matters concerning the relations between employers and employees which are dealt with by the Employers' Federations and Trades Unions ; and

(ii) matters concerning the conditions of working in the factories which are under consideration by committees set up by the Chief Inspector of Factories.

We have interpreted this to mean that it is not for us to make detailed recommendations on these matters. But we must take them into account so far as they affect the conditions in which the industry has to operate.

90. We have, therefore, based the whole of our recommendations on the view :—

(*a*) That the industry cannot hope to recruit a labour force adequate in quality and quantity unless the rates of earnings and conditions of work are such as to compare favourably with rates and conditions in other industries.

* Quotation from *The Times*, November 7, 1945.

(*b*) That the acceptance of the broad proposition stated in (*a*) involves a need for realistic assessment of the reactions which high standards of wages must have on technical practice and methods for utilisation of labour, if the industry is to be competitive with those of other countries. (*See* paragraphs 9–18 and Recommendations III, IV and V.) We now add the following additional remarks and recommendations.

RECOMMENDATION XIX.—WAGE SYSTEMS

A review of the wages arrangements and methods of organisation of work should be made in all sections.

91. We welcome the comprehensive review of wages and methods of organisation of work in the spinning section made by the Evershed Commission, and we recommend that similar reviews should be made for the other sections of the industry.

RECOMMENDATION XX.—INDUSTRIAL RESEARCH

A programme of research on matters affecting industrial employment should be worked out by the Central Body for the industry.

92. In the preceding section we have dealt with the relations between science and industry; but it is appropriate in the present section, which is concerned with the human factor, to emphasise the need for scientific study in this connection. Research and the application of scientific method to the review of practical problems is particularly necessary in this field. In making this statement we are concerned not only with research on matters affecting the physical health of the workers, but also with the scientific study of a number of aspects of industrial employment, e.g., conditions affecting the work load involved in various processes, psychological factors, etc. We consider that a special intensive programme of study under these headings should be worked out by the Central Body.

RECOMMENDATION XXI.—COLLABORATION BETWEEN EMPLOYERS, MANAGERIAL STAFF AND TRADE UNIONS IN INCREASING PRODUCTIVE OUTPUT

All possible steps should be taken to create mutual confidence and a spirit of collaboration in increasing productive output.

93. Finally we must in this section state our strong view that in the conditions which lie ahead there is a vital need for collaboration between management and wage earners in a new spirit. It is implicit in all that is said in this Report that the only way to ensure high and improving standards in earnings and conditions of work is to increase operating efficiency and the productive output of the human hands employed. The representatives of the wage earners must be brought into partnership in a common endeavour. We give this general statement a separate number as one of our recommendations, but mere general statements are not of much avail. There are, however, included among the preceding and following recommendations particular proposals which should help towards achieving this general objective, e.g., Recommendations IX (2), XVIII and XXXI.

III. EXTERNAL CONDITIONS AND GOVERNMENT ACTION

The Government must play its part in creating conditions which will afford a proper basis for confidence, both in international trade and domestic policy.

94. Up to this point we have been following out our opening statement that the industry's first task is to work up its own efficiency and that those who ask for outside help must first do everything possible to deserve it. We must now state equally clearly that if the industry responds to the proposals which we have made and sets to work on a programme for attaining maximum efficiency, then it can fairly point to the fact that many influences affecting success are outside its own control and ask the Government to play its part in creating conditions which will afford a proper basis for confidence.

III (a). CONDITIONS OF INTERNATIONAL TRADE

95. The first and most important set of conditions are those affecting international trade. We do not suggest that it is reasonable to expect the Government to give anything like a guarantee as to the volume of trade which will be available in particular markets; but on certain points clear declaration could be made and would be valuable. We mention some of these in the next three recommendations.

RECOMMENDATION XXII.—FAIR TRADING CONDITIONS

The British Government must create confidence that it will work for the maintenance of fair conditions in international trade and for a policy which will tend to maintain world purchasing power at a high and stable level.

It must be recognised that the course of discussions at the forthcoming conference on International Trade and Employment, as well as of any preliminary conversations that may take place with the United States and other countries, will be closely followed and will react on the spirit in which the cotton industry attacks its tasks of re-equipment, etc.

RECOMMENDATION XXIII.—POLICY FOR JAPAN

There should be a clear statement of policy in regard to Japan.

Not a few are looking to the defeat of Japan as an event which will have created new conditions likely to give Lancashire a chance to recapture lost export markets. We are not qualified to express precise views on this matter; but, whatever the short-run prospects may be, we feel that easy optimism is dangerous, since, even if Japanese competition may be less severe, there will be many new competitors in the markets affected. None the less, the development of Japanese exports must be a factor of major importance. We recognise that policy in regard to Japan cannot be settled by the British Government alone; but a statement should be made at the earliest possible moment. A vital question is "What policy is possible to prevent exports from Japan interfering with the United Nations plans to create conditions of full employment concurrently with higher standards of living throughout the world"?

RECOMMENDATION XXIV.—RAISING WORLD STANDARDS OF WAGES

The British Government should declare its support for international policies aimed at raising the standards of wages and working conditions in the textile industries of all countries.

We have in mind policies which are to be discussed at the forthcoming International Conference on Trade and Employment and policies which could be supported either by the I.L.O. or by the World Federation of Trade Unions. A very important practical question which should be considered at the forthcoming International Conference on Trade and Employment is how to treat the products of any country which does not maintain agreed minimum standards in wages and conditions of employment. Although this issue is most generally raised in connection with Japanese competition, it may have wider application.

III (b). DOMESTIC CONDITIONS

RECOMMENDATION XXV.—A DECLARATION OF DOMESTIC POLICY

A clear statement is required on certain matters of domestic policy affecting the cotton industry.

96. In the field of domestic policy statements by the Government showing its assessment of future possibilities in regard to certain matters would help to give the industry a basis on which it could plan with confidence. The following are examples of points on which statements of policy are required.

(*a*) It is particularly important that there should be an authoritative statement as to the part which the cotton textile industry is expected to play in the total British economic effort, i.e., to what extent is the cotton industry to be relied on to contribute to the increased volume of exports which the national position demands? The Government alone can review the national economic position as a whole and on many points its decisions will affect what can be done by the cotton industry.

(*b*) Another question which concerns the future of cotton is the extent to which the Government policy for the distribution of industry and for its diversification in particular areas is going to affect the position.

(*c*) Another question arises as to the order of priority to be followed in the allocation of national resources, e.g., what part of the engineering resources of the country can be devoted to the production of textile machinery for the home market. This has been dealt with under the various headings of our Recommendation II. An early statement of Government policy in relation to these should be made.

(*d*) It is desirable that when our Report has been considered the Government should again make a clear statement to the effect that its policy is to give the system of private enterprise in the cotton industry a fair chance to make good, and that the adoption of our recommendations is at no point intended to be a preliminary step towards nationalisation.

SPECIFIC MEASURES FOR ASSISTING THE RE-ORGANISATION OF THE COTTON INDUSTRY

97. Beyond declarations on matters of policy such as those mentioned above, we consider that certain specific steps should be taken by the

Government. On some of these definite recommendations are included in other parts of this Report, e.g., Recommendations III, V and VI. We now add some further recommendations about taxation.

RECOMMENDATION XXVI.—TAXATION IN RELATION TO RECOMMENDATION V

The provisions of the Finance (No. 2) Act, 1945, should be reviewed in the light of needs which may arise for consolidation schemes in special cases.

98. If the view is accepted that in special circumstances schemes for removing redundant plant may legitimately form part of a general plan for the rehabilitation of an important industry and that such rehabilitation is in the national interest, then we consider that some of the provisions of the Finance (No. 2) Act of 1945 may need reconsideration. As we have stated in our Recommendation V we believe that in the very special circumstances of this case a plan for the immobilisation of a moderate proportion of plant will help the rehabilitation of the cotton industry; but there are certain provisions in the Act referred to which may possibly operate in such a way as to hamper such a policy.

RECOMMENDATION XXVII.—GENERAL TAXATION POLICY

The measures introduced in the Income Tax Act of 1945 for encouraging the scrapping and replacement of industrial plant should be further extended.

99. In addition to the special proposals made in Recommendation III for the purpose of encouraging a progressive policy in scrapping and replacing plant we consider that, with the same end in view, changes are required in the general system for taxing industrial profits. We recognise that considerable improvements were made in the Income Tax Act of 1945, but we consider that these did not go far enough, and that there is a special justification now for change because the conditions which affect the present position are abnormal. We refer particularly to the following points. In the first place the rise in prices brought about by the war has been such that if the wear and tear allowance is based only on the original purchase price of plant, it is impossible to accumulate anything like enough to buy new plant in replacement (see Chapter VI). Secondly, the present time is one of very rapid development in machinery and technical processes, so that the factor of obsolescence has become of increased importance. The existing provisions which allow the writing off of the balance book value of a capital asset when it is scrapped may often be insufficient to meet requirements, since writing off can only be done out of profits and sufficient profits may not be available. Lastly, although most industries can see good prospects of earning profits for the next two or three years, the future beyond that is more than ordinarily uncertain. Firms undertaking heavy capital expenditure on re-equipment ought to be given the chance to write off a very substantial portion of this cost in the next few years and, in our view, something more is required beyond the initial allowance of 20 per cent. provided for in the 1945 Act. Taking into account these three considerations, we recommend the following changes:

(a) *that in addition to the single initial allowance of 20 per cent. on the cost of new machinery there should be a provision making it possible to bring the total amount which can be written off in the first five years up to 60 per cent. of the cost;*

(b) *that normal depreciation allowances should be increased so as to contain an element of obsolescence as well as wear and tear;*

(c) *that in order to take account of the great rise in prices, the values on which wear and tear allowances for plant are based should be recalculated so as to bring them into relation with current replacement costs.* (We recognise that to revalue all existing fixed assets throughout the whole of British industry would be an impossible task; but we suggest that it would be practicable to devise a formula for adding to the present written down value a percentage of the original purchase cost.)

III (c): EFFECT OF EXTERNAL CONDITIONS ON THE SIZE OF THE INDUSTRY

100. *Estimates of the future size of the industry should not be based on easy optimism about external conditions for exports. The industry must rely chiefly on its own enterprise and efficiency. It should consolidate itself on a basis which is not likely to require further contraction, but which is capable of expansion.*

We have by our review in Chapter VIII and by our statement in paragraph 8 of the present chapter, made clear that we are unwilling to attempt prophecies about future market outlets. Our position can be summed up as follows:

1st: We want the maximum healthy expansion of the industry.

2nd: The first task is to raise operating efficiency to the highest possible level. It is no use talking about exports without that.

3rd: The limiting factor for any period which can be foreseen will not be size of outlets but the size and balance of the available labour force.

Beyond this, owing to the uncertainties of the future, we have recommended that the industry should be so organised as to be capable of regulating its production in adjustment to market outlets with the minimum of dislocation and without falling into the demoralising condition which characterised the inter-war period. That is the main ground for our Recommendation IV.

101. If a view must be taken of the future, our attitude is that the right course now is to consolidate the industry on a basis which, whilst achieving the maximum production possible with existing resources, is not likely to need further contraction, but is capable of expansion. In considering what that basis should be, it is very undesirable to build on over-optimistic foundations. The surest foundation for confidence is to face the facts and give the workers the assurance that this is being done. There is no doubt that, even on a most conservative estimate of current and future demand, there is an urgent need at present to recruit more workers, so that those who return to the industry now need feel no fear of insecurity of employment because the labour force is too large. What they do need and are entitled to demand is an assurance that the industry is tackling the problems of improving its equipment and its methods of production and marketing so as to take its place again in the leading ranks of modern industries. Then there is hope for the future. But it is not going to be an easy future so far as exports are concerned. If

the industry can carry through a re-equipment and re-organisation programme, *if everybody works*, if the greatest skill is shown in discovering gaps in overseas markets which can be filled by British goods, and if satisfactory international economic conditions are established, there may be greatly improved prospects. But that is all still in the doing.

RECOMMENDATION XXVIII.—A CONTINUING REVIEW OF THE LABOUR POSITION

The total size and balance of the labour force should be kept under constant and continuous review. Returns should be called for from each operating unit for the purpose.

102. Following on the closing words of the last paragraph, we must add one specific recommendation. Although the problem for as long as we can foresee is likely to be one of labour shortage, so that there is no visible danger of an overall surplus, there may be local surpluses owing to a lack of balance in the labour force available for various processes. If workers should be thrown temporarily out of employment for that reason it might have a very bad effect on confidence in the industry and on the prospects of recruiting fresh workers.

Beyond this it is necessary to keep the situation constantly under review. The Government is taking a direct responsibility now in encouraging a recruiting campaign. We therefore recommend that the whole labour situation (the total and the balance in the different occupations) should be kept constantly under review, and that returns from each operating unit should be called for for this purpose. This at present is a responsibility falling on the Cotton Controller ; but it will in future be one of the main responsibilities of the Central Body for the industry which we are recommending. The powers to collect the necessary information must be given to that body.

IV. ORGANISATION

103. It now remains to consider what form of organisation will best help the carrying out of the proposals which we have made.

Two bodies are required:

A.—A Central Body for the industry as a whole which will be a permanent and important feature in the organisation, for which we recommend the title of "The Cotton Council".

B.—A Board appointed not as a permanent body but to carry out certain specific tasks which we have referred to hitherto as the Equipment Board.

As a matter of convenience we shall deal first with B.

RECOMMENDATION XXIX.—THE EQUIPMENT BOARD

An ad hoc body, to be called the Equipment Board, should be appointed by the Government to administer the special measure of consolidation proposed in Recommendation V and to be the agents for collecting and disbursing the Re-equipment Levy. This body should act on principles to be prescribed by the Government after consultation with the Cotton Council.

104. *The Equipment Board* should be appointed by the Government, after consultation with the Cotton Council, and would be entrusted with the following functions:

(*a*) To carry out our Recommendation V, viz., the purchasing and holding of a moderate proportion of plant.

(*b*) To be the agents for collecting the re-equipment levy and disbursing grants to be made from it. (Recommendation III.)

In the performance of both these functions we contemplate that the Board will be acting according to principles which will be laid down by the Government, but that, in settling such principles, the Government would have regard to the advice of the Cotton Council. In order to avoid any possible misunderstanding, we must state clearly that the Equipment Board, according to our recommendation, is not intended to be in any way responsible for initiating re-equipment programmes and other proposals for expenditure, or for prescribing the conditions to which they must conform. The initiative for the re-equipment plans of each unit would rest with the unit itself. What, however, we do envisage is that, as a result of the survey proposed in our Recommendation I, and of the investigation into the textile machinery supply position proposed in our Recommendation II, there will be drawn up a general programme for machinery supply to the industry as a whole covering a period of years. We contemplate that the broad outlines of this programme will be approved by the Government acting in consultation with the Cotton Council. The duty of the Equipment Board will be to see that proposals from individual units fit in with this programme, and also to see that grants from the Re-equipment Fund are only made for capital expenditure falling under the general headings stated in paragraph 41 (iv) (*b*).

It must be remembered that, according to our proposals, the Re-equipment Fund will represent moneys held by the Government. Accordingly the functions of the Equipment Board can be regarded as being—

(*a*) to authorise disbursements from public funds;

(*b*) to serve as the agents for carrying out a plan (prepared in consultation with the Cotton Council) for ensuring

(i) the supply of textile machinery at reasonable prices and

(ii) the allocation of such machinery to the best advantage and in an orderly fashion.

RECOMMENDATION XXX.—A CENTRAL BODY FOR THE INDUSTRY THE COTTON COUNCIL

There should be created a Central Body for the industry, to be called "The Cotton Council," which should be appointed by the President of the Board of Trade and consist of an independent Chairman and ordinary members of whom one-third should be independent members, one-third persons with knowledge of the various sections of production and marketing, and one-third from the Trade Unions.

105. We regard the proposal for a Cotton Council as a key point in our recommendations. In these we have deliberately chosen to put forward, not a complete scheme which would settle now the final pattern of the industry in all its details, but rather the initiation of a series of steps designed to lead to a defined objective, and capable of adjustment according to the way in which conditions actually develop. Further, it is an essential feature of our proposals that, while a broadly defined strategic objective should now be accepted by the industry and approved by the Government, a very wide discretion in working out the tactical methods for attaining it should be left to the industry. Lastly our recommendations contemplate that at various points Government guidance or assistance may be required and that the claims for this guidance or assistance should be based on a recognition that the prosperity of the industry is a matter of national interest.

106. If recommendations thus conceived are to be effectively carried out it is essential that there should be some central body commanding the confidence both of the industry and public opinion which can—

(i) be the instrument for focusing the general opinion of the industry on matters of policy;

(ii) watch developments and check whether they are proceeding in accordance with national interests;

(iii) prepare reports for the information of the Government and Parliament which can be trusted as being objective and free from sectional bias;

(iv) be a channel through which the industry as a whole can express its views to the Government and conversely the Government can issue general directives to the industry.

(v) be an agency through which the Government can exercise its powers or which can advise the Government on their exercise.

The need for such a central body, and for some method by which issues and purposes affecting the industry as a whole can be settled and pursued in the common interest, has long been felt. It is indeed a matter on which we believe there is almost universal agreement. The problem is how to make such a body effective.

107. The Cotton Board has made a most valuable start in the required direction. We believe, however, that something more is required to fulfil the purposes defined in the preceding paragraph in a manner which will be effective when the influence of war-time collaboration is over.

108. The essential need is to have a body which can be trusted to reach conclusions commanding the confidence both of the industry and the nation and which can rely on the collaboration of all sections, both on the side of the employers and the Trade Unions, in studying problems and executing policies.

We believe that success in meeting this need will largely depend on the fulfilment of the following conditions:—

1st: *In cases which concern matters of national policy there must be an assurance (based on experience) that where conclusions are reached on matters requiring Government action they will lead to immediate decisions by the Government; and that unless the Government for national reasons and with the approval of Parliament dissents from the conclusions, they will receive its active support.*

If it is clear that the body which is set up is taken seriously by the Government and that its conclusions lead to action, then it will be able to establish its authority with the industry, and promote practical and realistic discussions with industrial representatives. If that is not the case, there is a danger of achieving no more than generalised discussions and pious resolutions which are not taken seriously.

2nd: *The body which has to reach conclusions should have at its disposal, or should be able to call on the services of, first-class men with up-to-date practical experience who are not connected with any private business concern.*

(Some of our later proposals (see paragraphs 113–115) should help to satisfy this condition.)

3rd: *The members of the Council must not regard themselves as required to represent sectional interests, although some of them, as indicated in the next paragraph, may be chosen as persons with practical experience in particular lines of work.*

COMPOSITION OF THE COTTON COUNCIL

109. We recommend that the Council should have an independent Chairman and in addition to the Chairman, a membership consisting of—

One-third independent members;

One-third comprising members drawn from persons with practical experience in the spinning, weaving, finishing and merchanting sections;

One-third from the Trade Unions.

All members would be appointed by the President of the Board of Trade. It is essential that the Chairman and members should be able to give sufficient

time to their work on the Council, though we do not consider that a whole-time commitment would be necessary. We wish to record that we gave very careful consideration to the question whether the Chairmanship should be a whole-time appointment; but decided to leave our recommendation as stated above. A whole-time Chairman would tend to become the chief executive officer with the result that the Council might sometimes be put into the position of merely approving action on which commitments had already been undertaken. That would be quite contrary to our conception of what the Council discussions should be. The Chairman might have to give more time to the work than the ordinary members of the Council; but the chief executive responsibility should rest with a Director-General working under the Council.

FUNCTIONS OF THE COTTON COUNCIL

110. We propose that the Cotton Council should :—

(*a*) Be responsible for the direct exercise of certain functions.

(*b*) Have power to set up any bodies which it considers necessary for assisting the cotton industry.

(*c*) Work in close connection with bodies set up under (*b*) and with certain other bodies.

We make proposals under each of these headings in the following paragraphs.

Direct Functions

111. (i) The Cotton Council should take over the functions of the present Cotton Board.

(ii) The Government should consider to what extent the functions of the Cotton Controller might be more closely associated with the Council, having in view the possibility that, when the influence of war conditions is over, some residual functions might remain from those now exercised by the Cotton Controller and that these might be taken over by the Council. At present the Cotton Board and the Controller work on many matters in close collaboration and several of the Government's war-time powers are in fact directly exercised by the Cotton Board. We believe it would be desirable to make the link closer, and that, if suitable office accommodation could be found, the offices of the Council and the Control should be together.

(iii) What we have said in Part I and in our preceding recommendations will have indicated a number of special tasks which we consider should be undertaken by the Council. We mention the following as specially important :—

(*a*) *The enquiries necessary for making and maintaining a survey of the industry's equipment.* (Recommendation I.)

Immediate action under the Recommendation may have to be started before the setting up of the Cotton Council, but the full completion of the survey is likely to take some time.

(*b*) *The preparation of a plan for uniform methods of cost investigation, cost accounting, production records, etc.* (Recommendations IX (1) and (2).)

(*c*) *Market Research.* (Recommendation XI.)

This is a matter of major importance. We contemplate that the Council should regard the establishment of a Market Research

Branch as one of its chief tasks. If our recommendation as regards funds is accepted it will be in a good position to make a start now, and one of the first steps to be taken must be to arrange for the training of suitable men.

(*d*) *The arrangement of conferences on distribution.* (Recommendation XII.)

(*e*) *The continuous study of the distribution of the cotton industry's products.* (Recommendation XIII.)

(*f*) *The promotion of schemes for education and training* (e.g., arrangements for instruction in the principles of management and possibly for an "Administrative Staff College" for Lancashire. (Recommendation XVIII.)

This list is not intended to be exhaustive.

FORMATION OF BODIES TO ASSIST THE COTTON INDUSTRY

112. What should be done in the exercise of this function must of course be left mainly to the Cotton Council. We cannot attempt to forecast all that it might find it advisable to do. In the next paragraph, however, we put forward a recommendation for the setting up of one particular body which can appropriately be mentioned in connection with this heading.

RECOMMENDATION XXXI.—A CENTRAL FACTORY COMPANY FOR THE INDUSTRY

As an organisation working in close connection with the Cotton Council, there should be set up a Company (all the shares of which would be held by the industry) to own a certain number of mills to be operated on a commercial basis but used as "yardstick" and development factories for various purposes for the benefit of the whole industry (testing processes, machinery, working methods, providing data on costs, costing methods, etc.).

113. We recommend that the Cotton Council should arrange for the setting up of a Company to operate a certain number of factories (which might either be purchased specially or provided for by taking over and modernising some of those purchased under our Recommendation V). We consider that it would be of great value to have a certain number of factories in which the industry as a whole would, through this proposed Central Factory Company, be interested. We have the following purposes in mind. Such factories would:—

(i) Give the Council a "yardstick" for checking the factual data on many issues affecting the industry.

(ii) Afford an opportunity for experimental or pilot work in trying out on "mill scale" the operation of new plant as well as new methods of operation. Such factories could be worked in close co-operation with the Shirley Institute and the new Research Association for the rayon industry, and could thus constitute a valuable Development Branch for those Institutes. It could also work in the same way for the textile machinery industry. (It will in our view be of great advantage to have facilities for carrying out such tests in factories owned by this Central Company rather than in factories lent for the purpose by privately owned Companies.)

(iii) Afford an opportunity for testing out, on mill scale, various new methods for the staffing of mills and the arrangement of operatives' functions,

testing the work loads involved in such methods, etc. It is to be hoped that since Trade Union representatives would, according to our proposals explained below, have a share as directors in planning and supervising the work of these factories, experiments could be tried out with mutual confidence on both sides. (See above, paragraph 92, Recommendation XX.)

(iv) Afford an opportunity for testing the working of different cost-accounting methods.

(v) Afford an opportunity to try out important new types of foreign machinery.

(vi) Afford an opportunity for trying out different types of cotton.

(vii) Be available for use in connection with training schemes of various kinds which may be promoted for the general benefit of the industry.

114. We wish to emphasise that, while the object of this proposal is to provide co-operatively owned factories in which trials for the benefit of the whole industry could be carried out, we have in mind that such trials should be undertaken as a feature of a normal commercial undertaking. We do not contemplate very costly pioneer experiments, but rather the testing of modifications of established methods, or tests to establish the comparative results of different methods. The results of any trial work in these factories would be available for the benefit of the whole industry.

115. In order to fulfil the objects of this proposal, and particularly to provide a broad enough basis for the purpose explained in the last paragraph, it would be necessary to have fairly substantial capacity and a sufficient number of separate units to cover different types of work in each section. A limit should, however, be fixed for the total capacity so as to make it quite clear that there is no intention to develop the Company's activities on a scale which could be regarded as competing with the ordinary commercial undertakings. It must also be made clear that it is not to work under privileged conditions. As a rough indication of the scale of operations contemplated we suggest that the maximum spinning capacity might be about 250,000 spindles and the maximum weaving capacity about 2,500 looms. As regards finishing it is difficult to specify any precise measure of capacity.

116. These factories would be open for visits by representatives of any firm registered as a member of the "cotton industry" or representatives of any of the Trade Unions whose members are employed in the industry. (The registration of firms is referred to in paragraph 123 (3) below.)

Finance of the Central Factory Company

117. The general basis of our proposal is that this should be a Co-operative Company in which the whole industry holds shares. It would follow that the ordinary capital ought to be subscribed by the units of the industry on some quota basis.

A substantial proportion of the fixed capital could also properly be raised on loan and might suitably be provided either by the Finance Corporation for Industry or by a public issue with a Government guarantee under the Borrowing (Control and Guarantees) Bill.

We further consider that part of the balances held in the Re-equipment Fund might suitably be used to make temporary advances to, or possibly a permanent investment in, this Company.

Taking these possibilities into account, the amount of money required in the form of ordinary capital ought not to be embarrassingly large. We consider that dividends on the ordinary capital should be limited to a very moderate percentage; and that any surplus earnings should be used for creating funds for experimental work. We trust that, subject to this condition, the Company would be treated favourably for taxation purposes.

The Board of the Central Factory Company

118. We propose that the Board and management should be nominated by the Cotton Council and that representatives of the Trade Unions should be included.

OTHER BODIES WITH WHICH THE COTTON COUNCIL WOULD WORK

119. In addition to the Central Factory Company, or any other bodies which may be created on the initiative of the Cotton Council, we contemplate that it would also work in close contact with the proposed Central Marketing Company and the Shirley Institute.

SUMMARY OF PROPOSALS FOR THE WORKING OF THE COUNCIL AND ITS RELATIONS WITH OTHER BODIES

120. We can now summarise the position to show how the Council would work.

(i) For the exercise of its direct functions it would look to a Director-General as its chief executive officer. This must be a well-paid appointment to be filled by a man of exceptional ability.

(ii) For so long as the Cotton Control operates separately, the Cotton Controller should be invited to attend all discussions on matters of policy which in any way affect his work.

(iii) We contemplate that the Managing Director and staff of the Central Factory Company would be available when called upon to assist in any inquiries, etc., directed by the Council.

(iv) The relations of the Central Marketing Company with the Council would be on a somewhat different basis, but we contemplate that close contact should be maintained between the two and that on many matters the staff of the C.M.C. would be available to help in inquiries or other work undertaken for the benefit of the industry by the Council.

(v) We trust also that the Director and expert staff of the Shirley Institute would be available for consultation and for studying special problems in the same way as has been the case in connection with the working of the Cotton Board.

If arrangements are made on the lines suggested above the Council would be able to rely for special purposes on the services of a number of experts, who would at the same time be in daily contact with practical work. This is important for the fulfilment of the second condition for success mentioned in paragraph 108.

RECOMMENDATION XXXII.—AN ANNUAL REPORT

The Council should prepare a comprehensive Annual Review of the working of the cotton industry to be laid before Parliament.

121. There is one function of the Council which remains to be mentioned and which we regard of such importance as to justify treatment as a separate recommendation. It should be one of the chief tasks of the Council to prepare

a comprehensive Annual Review of the working of the whole industry which could be laid before Parliament. This will be valuable both for the industry itself and for the information of the Government and Parliament.

STATUTORY CONSTITUTION AND POWERS

122. Legislation will be required to set up the Cotton Council and to give it the powers necessary to fulfil the functions of which a general description has been given in the foregoing paragraphs. In dealing with the question of powers, however, there is one point which we must state clearly in order to guard against any possibility of misunderstanding. We are not proposing the creation of a body with statutory powers to control the policy of the industry. If any decisions on matters of policy are to be imposed on the industry the responsibility for these must rest directly on the Government and Parliament. The power to take such decisions ought not, in our opinion, to be delegated to a body like the Cotton Council, though our recommendations imply that it would be consulted before they were taken and that its advice would not lightly be disregarded. The real authority of the Council will, as we have already made clear, depend on the extent to which it can earn for itself the confidence both of the industry and the Government by focusing and unifying opinion among all sections and by reaching wise conclusions. The Council will, however, according to our recommendations (see especially paragraph 106) be charged with several important duties, and it will require certain powers, particularly for the collection of information. The exact nature of these will depend on the extent to which our recommendations are accepted, but for convenience we have put together in the next paragraph certain points extracted from the provisions of the Cotton Industry (Reorganisation) Act of 1939 and the Cotton Industry Act of 1940.

123. The powers and functions of the Council might be broadly defined in legislation as follows :—

(1) To perform, with a view generally to the benefit of the industry and in particular to the maintenance and extension of export trade therein, the following services—

(*a*) to conduct, and to promote or encourage by financial assistance or otherwise, research and experiments in matters relating to the manufacture and distribution of products of the industry ;

(*b*) to conduct, and to promote or encourage by financial assistance or otherwise, research and investigation in matters relating to the consumption of products of the industry.

(*c*) to take such measures as the Cotton Council think proper for increasing the consumption of products of the industry, including advertising and the giving of demonstrations and instructions with regard to the use of such products ;

(*d*) to collect and publish statistical and other information relating to the industry ; and

(*e*) to negotiate with any person in respect of any matter appearing to the Cotton Council to affect or to be likely to affect the industry.

(2) To advise on questions relating to the industry which may be referred to them by any Government Department.

(3) To compile registers of firms engaged in the industry and of merchants.

(4) To require registered firms to furnish to them returns and other information, including information with respect to the productive capacity, output, orders, sales, deliveries, stocks and costs.

(5) To enter premises and inspect accounts, books, etc. The right of inspection should be confined to cases where it is necessary to ensure compliance with defined obligations.

(6) To constitute such committees, consisting wholly or partly of members of the Council, as the Council consider it desirable for the discharge of their functions to constitute.

FINANCE

124. Arrangements will be needed for financing the Council and for enabling the Council to enforce payment of dues. We refrain from making specific recommendations on this point, as it is one on which estimates can be better worked out after our main recommendations have been considered by the industry.

RECOMMENDATION XXXIII.—ORGANISATIONS WITHIN THE INDUSTRY

The various sections within the industry, including both employers and operatives, should review the situation and make sure that their associations, etc., are well adapted to present and future requirements and conditions.

125. The proposals which we have made for a Central Body for the industry cannot be fully effective unless the body is able to work with active and responsible organisations in the various sections.

We shall not attempt to make detailed recommendations; but we feel that the time has come for each of the many associations, etc., to undertake a searching review of its position. In the coming era when, for the purposes of national economic policy, interaction will be required on many occasions between the Government and industry, the function of trade associations must inevitably take on a new significance. It is no longer sufficient for them to think merely in terms of protecting the sectional interests of their members. We do not suggest that this is not a legitimate function; but, in addition, they must now be ready to play a part in formulating constructive plans, in providing information required by the Government for reviewing the national economic position, and in acting as instruments for collaboration in public policy. We again emphasise the need for a new outlook and the importance of ensuring that there is adequate representation in the councils of industrial associations of the views of progressive men with vision of the future.

RECOMMENDATION XXXIV.—RELATIONS WITH THE RAYON INDUSTRY

The Government should call an early conference between representatives of the rayon industry and all the textile industries to consider their future relations.

126. We have left one subject of major importance to the end—the relations between the cotton industry and the rayon industry. It is implicit in all that we have said that we regard this as vitally affecting the future of both. There must be a close link between the two. We do not, however, think that the need can be adequately met merely by providing for a minor

representation of the rayon industry on the Cotton Council. We consider that the proper measure is to arrange in some way for continuous close consultation between the Rayon Federation and the Cotton Council.

Moreover, as we see it, still wider issues are involved. As pointed out in Chapter IX, scientific advance has created a new integrating force for all the textile industries. We consider that a new outlook is necessary on the relations between them. This matter is of such wide national importance that we recommend that *the Government should call an early conference between representatives of the rayon industry and all the textile industries to consider their future relations.*

CONCLUDING OBSERVATIONS

127. At the end of our long series of recommendations we wish again to make clear the spirit in which they have been put forward. They are intended to provide a basis on which the industry can work out its own salvation, assisted at several points by the power of the State. They are framed so as to give individual units the maximum freedom for initiative and enterprise and to keep intervention by the Government to a minimum. The latter is envisaged rather in the form of a watch to see how things are going than as central control or direction. Government supervision would be exercised only so far as necessary to ensure

1st: that the industry's policy is developed in harmony with the national interest as a whole;

2nd: that the industry is providing a basis for good conditions and security of employment;

3rd: that the industry is getting fair treatment in its dealings with other industries (e.g., the textile machinery industry).

At the same time, however, our proposals are inspired by the conviction that, if success is to be achieved with a minimum of Government intervention, then (1) the industry itself must have a correct appreciation both of its own and of the national problems, and (2) the individual component units must be ready on many matters to join in collective action for the benefit of the whole.

We accept the view which runs through the whole of the report made by the Post-War Committee of the Cotton Board that the tasks of readjustment with which the industry is confronted are of such a magnitude that they cannot be satisfactorily handled by the scattered efforts of individual units, and we cannot agree with those who argue that all that is needed now is to leave matters alone. We believe that such a course might lead now, as it did in the inter-war years, to economic loss and unsatisfactory human conditions of a kind which the nation cannot afford. The fact that the problems of readjustment now confronting the industry are in their nature totally different from those of the inter-war years does not alter this conclusion.

While to this extent we agree with the Cotton Board Committee's appreciation of the scale of the problem, we have felt compelled to differ from their recommendation for a price regulation scheme of indefinite duration as the solution. In place of that we envisage a transition period of about three years of controlled prices, and we look to that period, together with the measures proposed in our Recommendations III, IV and V as affording the

industry a great opportunity to build up a strong position on which, when the transition is over, it can stand out in the bracing air of free competition both at home and abroad.

Finally, we must once more emphasise our acute sense of the urgency of the national need and of the greatness of the present opportunity for the cotton industry. If that opportunity is missed, its future is indeed likely to be " bound in shallows and in miseries ". We feel no shadow of doubt that our appreciation of the problems and objectives is correct and that the general framework of our proposals is on the right lines. As to the precise way, however, in which these proposals can best be applied we have recognised that there are possibilities for variation. Since we have been unable to discuss these proposals with representative bodies in advance of their consideration by the Government we have recommended that the industry (including both the employers and Trade Unions) should now be given a fair opportunity to consider their detailed application or to put forward alternative plans for attaining the same objectives.

What we chiefly ask now is that our appreciation of the problems shall be impartially studied.

If that is done, then we feel confident that the opportunity offered by our proposals will not be thrown away.

GEORGE SCHUSTER
T. GRIFFIN*
ALBERT KNOWLES*
A. NAESMITH*
A. ROBERTS*
R. C. REYNOLDS†
C. B. CLEGG
E. L. HIRST
JOHN JEWKES
ANNE G. SHAW
A. V. SYMONS
W. M. WIGGINS

subject to dissent on certain recommendations and on the arguments leading up to them, as set out in the " Memorandum of Dissent on Certain Matters " (page 218) and, in the case of Professor Jewkes, to the further memorandum on page 242.

G. J. MACMAHON, *Secretary.*
SYDNEY WILKS, *Assistant Secretary.*

Manchester,
29th April, 1946.

[Sir Roy Dobson after his original appointment had to leave the country on urgent business and thereafter found himself unable to participate in the Working Party's deliberations.]

* See also Explanatory Memorandum on page 239.

† Subject to the reservations on page 214.

RESERVATIONS BY MR. REYNOLDS

RECOMMENDATION III. A RE-EQUIPMENT LEVY

I agree with the general principle of a levy for re-equipment as presented in the Main Report, although I do not agree entirely with the method proposed for collecting it. I definitely disagree, however, with the view of those members of the Working Party who have signed the " Memorandum of Dissent on Certain Matters " and who hold that re-equipment can be most effectively dealt with by releasing export prices from control, by allowing the increased revenue which should result from this step to pass into the hands of distributors and producers in the form of additional profits, and by leaving the individual producing units to apply those additional profits (or such as may remain after taxation) to re-equipment if they so desire.

I agree with the proposal in the Main Report that the funds for re-equipment should be provided by a uniform scale of addition to *all* prices, both for home trade and for export. But to discriminate as suggested in the Memorandum of Dissent and considered in paragraph 44 of Part II of the Main Report, between home trade and export prices in an industry in which producers (spinners, weavers and finishers) have a very imperfect knowledge of the ultimate destination of their products, would entail considerable confusion and abuse of opportunity. In any event, such discrimination must involve a substantial measure of Government regulation of production, in order to ensure that the less profitable home trade receives its due share of the output. The imposition of such regulations upon every individual producer, not only in respect to quantity, but also in respect to quality, seems to me to be the negation of private enterprise and to involve the perpetuation of those controls, the removal of which is sought by those who advocate freedom in export prices. Moreover, there is no certainty that in the conditions which will exist in the next few years, the producers would obtain the full benefit of any premium which could be secured through uncontrolled prices for export. It seems to be too readily assumed that the condition referred to as a " sellers' market " (which means no more than that aggregate demand will exceed aggregate supply) will apply equally throughout the whole range of production. It is more than probable that production in the next few years will be carried out in a larger number of individual units than are really necessary, each equipped with an excess of plant capacity, and an insufficient labour force to operate it. In such conditions there will still be keen competition for orders (and especially export orders) in order to reduce costs by raising the level of production more nearly to the level of capacity, and in order to justify the individual unit in the attempt to secure a larger proportion of the attenuated labour force. The premium on export prices would become to some extent a " gambling counter," of which buyers would not be slow to take advantage. This might well result in a substantial part of the export premium being dissipated either in price-cutting to obtain additional orders, or in bidding up wages, rather than accumulating in the hands of producers in the form of additional profits to finance re-equipment.

Whilst, therefore, favouring a uniform scale of addition to all prices to provide funds for re-equipment, accompanied, if necessary, by a system of rebate at the distribution stage on certain goods for the Home Market, to mitigate the effect on the cost of living index (as is now the practice), I do not agree with the proposed re-equipment levy chargeable on all mills at a uniform rate per spindle.

It is not possible that a uniform rate of levy per spindle can exactly balance a series of graduated price increases on the sales of yarns of different counts, and, therefore, the difference between the amount collected by an individual firm through the increase in price and the amount paid by that firm on a uniform levy per spindle, must be reflected in the firm's profit and loss account. Since the specific object of the proposal is to provide funds for re-equipment, I consider it undesirable that any firm should be able to make a profit out of the arrangement, and I consider it equally undesirable that any firm should be placed in the inequitable position of being compelled to pay, by drawing on its own profit and loss account, a greater sum towards the re-equipment fund than it has derived from the addition to prices. This does not mean that there should be no additional profits accruing to the trade from the higher prices which exports are likely to command since the specific addition to all prices for the purpose of re-equipment will not necessarily be as great as the premium in price that exports will command. But it does mean that the full amount included for re-equipment should be available for that purpose, and that no firm should be penalised by its participation in the arrangement.

My recommendation, therefore, is that the levy should take the form of each firm accounting for and paying over to the Equipment Board the exact amount of the specific addition made to prices for re-equipment which it has collected through its sales. The amount should be readily ascertainable, and can be certified by the firm's auditors. Each firm thus becomes merely the agent through which the re-equipment fund is collected. None will gain, and none will lose, by their participation, and no firm can sustain a claim on the fund by reason of having contributed to it out of its own profits. The latter principle is of some importance since the Equipment Board will have to exercise discrimination in approving grants out of the fund for re-equipment.

The inequity, and the impracticability, of attempting to balance a specific addition to the price of a product by a levy based on the operation of units of plant would become even more pronounced if applied to the Finishing section of the industry.

For reasons which will appear in the Reservation that I have to make on Recommendation V, I think it would be advantageous to combine re-equipment with the removal of surplus capacity within the functions of the Equipment Board, and that to the extent necessary the funds raised by the levy should be available for both purposes.

Recommendation IV. Grouping or Amalgamations

I do not think that groupings or amalgamations should be the subject of a recommendation with the proviso that the industry should submit specific proposals within a time limit. Such a proposal carries with it the implication that if satisfactory proposals are not submitted within the period specified some further action, possibly involving compulsion, would be necessary. This implication is strengthened by the penal effect of the incidence of the re-equipment levy upon the under-employed firm in the form in which it is presented in Recommendation III, and in respect to which I have made a reservation. I believe that groupings or amalgamations would be desirable as a means of securing more effective co-ordination of effort or of devising more effective policies, but I do not believe that such arrangements can be satisfactorily brought about otherwise than by purely voluntary methods based upon a recognition of the advantages they would confer.

To the extent that groupings or amalgamations may facilitate dealing with the problems of re-equipment, individual firms will, no doubt, have regard to their advantages. Many will appreciate that our recommendations, as a whole, envisage much more co-ordinated effort than the industry has hitherto undertaken, and to that extent may lead to closer collective action within the various sections, or even to groupings or amalgamations.

I support the recommendation to the extent that such movements should be advocated and encouraged, but I disagree with that part of the recommendation (Part II, paragraph 49 (*a*)) which calls for the inclusion of this subject in the proposals which the industry is invited to submit within a limit of time.

RECOMMENDATION V. A SPECIAL MEASURE OF CONSOLIDATION

Whilst I share to the fullest extent the recognition implicit in this recommendation that the establishment of a healthy industry is dependent upon the removal of productive capacity which is much in excess of any probable market demand, and especially that form of surplus capacity defined in the major report as " unbalanced " redundancy, I wish to emphasise more strongly the importance at this juncture of avoiding anything which would have the effect of reducing the current output of yarn.

The shortage of yarn is so acute, and the difficulty of recruiting sufficient labour so great, that no risk should be incurred of increasing either the shortage or the difficulty. It is recognised in the Report (Part II, paragraph 28 (i)) that in the immediate future the price factor will be of secondary importance, and since the labour position is, at least, somewhat indefinite, it would be preferable, in my view, to run the risk of producing some proportion of the total output of yarn uneconomically in the immediate future, rather than to run the risk of producing less. The immediate closing of mills, or the immediate immobilisation of spindles, would not only react upon recruitment, but would inevitably throw out of employment a number of operatives now engaged in yarn production without any assurance that they would or could find reasonably convenient employment, and so maintain an equivalent volume of production. It will, no doubt, be necessary at a later stage for some mills to close, or for a number of spindles to cease production permanently, but this should follow the certainty that the requisite labour cannot be obtained, or that the progress of re-equipment has been carried to the point at which such steps can be taken without reducing the output of yarn. I do not differ from the recommendation in respect to the method of dealing with this problem, or of the justification for the Government's contribution to the cost, but I do wish to emphasise the importance of timing the operation in the spinning section in the light of proved facts.

The extent of " unbalanced " redundancy in the industry is more marked in some sections than in others, and this applies in particular to the finishing section, where there has been no contraction comparable to that brought about in the spinning section by the operations of the Spindles' Board. In such a case there is no reason to delay the process of re-adjustment, and in fact, considerably urgency. There is no major problem of re-equipment in the finishing section such as that which faces the spinning and weaving sections, and the extent to which re-equipment may be required cannot be determined until the productive capacity of the section has been brought more into line with that of the earlier producing sections of spinning and weaving. It would, in my view, be an advantage in these circumstances, if the administration of re-equipment

and the adjustment of productive capacity were dealt with jointly as a function of the Equipment Board, and that the re-equipment fund raised on behalf of the finishing section should be applied by the Board to either of these problems, in conjunction with such contribution as the Government may make towards the cost of dealing with redundant plant.

RECOMMENDATION IX (2). PUBLICITY OF FINANCIAL RESULTS

I do not dissent from the view that effective collaboration between workers' representatives and employers must rest upon mutual confidence, and that confidence would be more readily established if workers' representatives had a more intimate knowledge of the commercial results of such collaboration. But, I believe, this could be achieved without the wide publicity recommended in Part II, paragraphs 69 and 70. The publication of profit and loss accounts and balance sheets for every type of industrial enterprise would not be in the interests of industry, or even of the workpeople themselves, and in my view, the recommendation in the form in which it is presented goes far beyond the terms of reference of the Working Party.

R. C. REYNOLDS.

MEMORANDUM OF DISSENT ON CERTAIN MATTERS

By Mr. Clegg, Professor Hirst, Professor Jewkes, Miss Shaw, Mr. Symons, and Mr. Wiggins.

Introduction

1. We accept Recommendations I, II, VII–XXV, XXVII, XXVIII and XXX–XXXIV in the Report of our colleagues. We regret that we have found it impossible to accept Recommendations III, IV, V, VI, XXVI and XXIX relating to Amalgamations, Redundancy Schemes, a Re-equipment Levy and an Equipment Board, or the arguments which lead up to them.

2. We feel bound to make three general comments which help to explain our position. First, we emphasise that our rejection of compulsory amalgamations, redundancy schemes and the re-equipment levy does not arise out of any sense of complacency regarding conditions in the industry or out of any disposition to minimise the task which confronts it if it is to reach the maximum level of efficiency. The twenty-eight recommendations we accept provide a valuable framework within which the industry can press forward to the desired goals. But the remaining recommendations, which are part and parcel of each other, seem to us ill-adjusted to the circumstances of the post-war world. Their implementation might well, in our opinion, frustrate much that is of value in those recommendations on which the Working Party is unanimous. Secondly, we have assumed that the post-war world would be one of full employment for British labour. Whether in fact that will be the case will depend upon the long-term success of the Government policy for maintaining a high and stable level of employment as laid down in the White Paper on Employment Policy of May, 1944. But if, as we assume, the days of general unemployment are over, then the fears and anxieties, which still understandingly remain in Lancashire as a result of the nightmare experience between the wars, must be set on one side and the restrictive solutions to the problems of industrial mal-adjustment then adopted must be considered as completely obsolete.

3. Third, there is a serious danger that in the immediate future the cotton industry will be allowed to fall between two stools and to enjoy neither the advantages claimed for a state-directed industry nor those of one which operates under free enterprise. In the next few years free enterprise, as indeed nationalised industry, will be strictly on trial in this country. The Government has announced that it does not propose to nationalise the cotton industry. We assume, therefore, that the intention is to give free enterprise in this industry an opportunity to exhibit what powers it may possess to achieve the aims which are universally accepted ; a reasonable standard of living for the workers ; efficiency which will maximise exports and cater, at reasonable prices, for the domestic consumer ; profits which will enable the industry to maintain the technical standards essential for efficiency.

4. There are three inescapable corollaries of this intention. First, that the Government should expeditiously remove certain war-time controls, especially as they relate to the export trade, which at present are depriving

the system of free enterprise of some of its motive force* Second, that the Government should, in no equivocal fashion, make clear to the industry the degree of responsibility being placed upon it.† Third, that it should be recognised that all sense of responsibility will be stifled unless those upon whom responsibility is placed are left free, subject to satisfactory conditions of employment and wages, to make their own decisions, within the broad lines of policy laid down by the Government, and are not constantly overriden from above.

5. There may be differences of view as to what is consistent and what is not consistent with a system of free enterprise. Into that controversy we do not propose to enter. But there are certain broad groups of decisions which clearly must be left to the business man if the operating economic system is to have any claims whatsoever to be considered as one of free enterprise ; whether his factory is large enough for efficient operation; whether there would be any gain from amalgamation horizontally or vertically with other firms ; whether he is likely to reduce costs by re-equipment ; whether the present is the right time for re-equipment ; and whether a particular commercial risk should be taken or not. If freedom in these respects cannot be restored and active competition re-established between the firms** then the atmosphere will be inimical to enterprise and indifference will creep in. In a socialised industry there is one form of incentive ; under free enterprise there is another. But there is little incentive to be found either in monopolistic capitalism or in free enterprise fussily fettered by the State.

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* See paras. 47–51.

† See Section 6, Recommendation 6.

** It is disappointing that the industry has not been able to provide authoritative information regarding the range of costs between firms producing much the same products. It is true that the wide variations in profits on capital or per spindle between the different spinning firms suggest wide variations in efficiency, but these figures cannot be regarded as conclusive. There is practically no statistical information on this point for the weaving industry. Admittedly the task of measuring costs, under comparable conditions, is complex ; but it should not be impossible. There can be no doubt whatever that very great differences in efficiency do exist. Indeed quite a vivid glossary could be produced of terms used to describe the poor concerns. It is for this reason that I attach special importance to a period of vigorous competition between the firms. It would be of advantage both to the industry and the nation.—J. Jewkes.

Section 1

AMALGAMATIONS

6. We do not think it likely that a widespread process of amalgamation in the cotton industry would bring any gains and we are convinced that compulsory amalgamation would defeat its own objects. Voluntary amalgamations may, in some cases, have advantages, particularly by making larger sums available for research. But voluntary amalgamations entered into by firms seeking the maximum efficiency of operation and carefully bringing together units which best fit is one thing. Amalgamations formed under the duress of doctrinaire principles are quite another.

7. It is sometimes held that the actual units of which the cotton industry is composed are too small for efficient operation. This subject falls into two parts: as it affects the *technical* units in the industry—the actual spinning mills and weaving sheds—and as it affects the *commercial and financial units*—the individual businesses.

8. As regards the technical units, we believe that the industry suffers from no disadvantage. In weaving, the optimum size of plant varies with the character of the cloth being produced. For cloths of medium quality a shed of 400 looms would probably give every economy possible. For high-class variety products a smaller mill would be quite economical. About one-fifth of the looms in Lancashire are found in sheds with fewer than 300 looms. The size of shed varies widely, but there appears to have been no tendency for the larger shed to drive out the smaller such as would have been inevitable in the intense competition between the wars if, in fact, the smaller shed was less economical. In medium counts a mill of 50–60,000 spindles can probably produce as cheaply as a large mill, smaller mills being suitable for specialised purposes. Before the war about one-seventh of the spindles were found in plants with less than 60,000 spindles. It is worthy of remark that in the United States, where the vast proportion of cotton establishments both spin and weave, the average size of these establishments before the war was about 40,000 spindles and 900 looms, i.e., their spinning units were considerably smaller and their weaving units larger than those found in Great Britain. The average size of establishment in the United States has been steadily falling for the past 20 years; the more prosperous mills in the Southern States are much smaller than the mills in New England.

9. In the light of such facts we find it impossible to attach any great importance to the assertion that the technical units in Lancashire are too small for efficiency.

10. Turning now to the size of the firms. The Lancashire spinning industry is essentially one of large organisations. More than one-half of the spindles are controlled by 31 firms, each owning more than 200,000 spindles. Among these are four giant combines which control between them nearly one-third of the total spindles. If very large business units were the royal road to success, the Lancashire spinning industry would be far and away the most successful in the world. Experience, however, does not support the view that firms of this size, merely by virtue of their size, have overwhelming commercial or

financial advantages over smaller firms. The big spinning combines have been far from setting standards in efficiency which could not be reached by firms one-tenth their size.

11. Indeed the advocates within the industry of further spinning amalgamations do not found their case upon the technical and commercial economies of bigger units. They argue rather for amalgamations in spinning as a method through which the whole industry could be reorganised. If the whole of the spinning industry could be brought under the control of a few large combines, the argument runs, these combines could dictate policy for the other sections of the industry and thus overcome what are considered to be the disadvantages of the present horizontal structure of the industry. Further, it is suggested, large amalgamations could quickly deal with the redundancy in the industry, each amalgamation closing down its weak units.

12. We see no advantage in placing the remainder of the industry under the virtual control of a number of spinning amalgamations. To recommend the amalgamation of heterogeneous groups of spinning firms—good and bad alike—in order to force the closure of the bad seems an extremely devious way of achieving efficiency. The formation of further large horizontal amalgamations in spinning might well impede the closer contact between the different sections of the industry which is generally regarded as necessary. In any case we differ from our colleagues regarding the need for dealing immediately with the so-called " problem " of redundancy. We consider that the case for and against larger units in the spinning industry should be discussed from the point of view of efficiency, i.e., its effect upon cost of production and technical progress—and there the case for horizontal amalgamations is not proven. If amalgamations are to come in spinning they should come voluntarily, with the careful association of firms which will make the most convenient fit from the technical, commercial, administrative and research angles, and thus reduce costs. These are matters which firms must decide for themselves. To force amalgamations from above would be courting trouble.

13. The case for large amalgamations in the weaving industry is even less convincing. The running of a weaving business is a highly intricate task in which the need for constant and untiring supervision gives great advantages to the relatively small units and, although there are a small number of concerns with more than 2,000 looms, there is nothing in their history to suggest that their superior size has given them advantages over smaller rivals.

14. In the finishing trades very large combines have operated since the beginning of the century. But we know of no one, in a position to judge fairly, who would be prepared to argue that the combines by their size have been able to gain economies which made it impossible for much smaller firms to compete with success.

15. We believe, therefore, that whether the question is looked at from the technical or from the commercial point of view the units in the cotton industry are generally speaking of a size fully compatible with maximum efficiency.

Section II

REDUNDANCY OF CAPITAL EQUIPMENT

16. Our colleagues are, throughout their report, gravely concerned with the problem of redundant capital equipment and they propose a series of operations for dealing with it. As they see it, one slice of the industry should be removed by the process of amalgamations, each amalgamation then closing down its weak units. Another slice of the industry should be eliminated by a scheme for purchasing and immobilising machinery, partly at the cost of the taxpayer, partly at the cost of the industry and, presumably at the expense of the consumer ultimately.

17. The pre-war schemes for dealing with redundant capacity in the cotton industry operated under conditions where there was a surplus both of equipment and labour. The presence of this double surplus led employers to produce cotton yarn and cloth at less than the full cost of production (including an allowance for capital). This " weak selling " made for discontinuous production and short-time working for the operative. Hence the schemes for a " once for all " surgical operation to cut out the unwanted equipment.

18. Whether these schemes justified themselves or not is a matter which is open to argument. Their advocates would suggest that they brought a measure of stability in production and trading. Their critics allege that they encouraged the expansion of the cotton industries in other countries and decreased our competitive strength by placing upon the Lancashire industry, fighting for its life, additional costs in the form of surplus capacity levies for disposing of spindles which would have gone out of existence in any case.

19. But pre-war experience and pre-war controversy are now irrelevant. We consider that there is now an overwhelming case against any scheme to impose a compulsory levy on the industry (or an additional burden on the general taxpayer) for the purpose of buying up cotton machinery and destroying it or putting it into " cold storage." The reasons which lead us to this conclusion are as follows.

20. The present time would in any case be highly inappropriate for carrying out such schemes. Trading conditions at the moment are extremely fluid. No one can predict with any certainty what size the industry will finally attain, where our markets will be found, what type of cloths we will be called upon to produce. To carry out a " surgical operation " before it is known what part, if any, of the patient should be amputated, seems to us a highly precipitate move. We have particularly in mind the great hazards involved in reaching, at the present stage, any definite conclusions as to whether sufficient labour will be shortly available in the cotton industry to run the existing equipment. It is generally acknowledged that it is a shortage of spinning labour which constitutes the present " bottle-neck " in production. Our colleagues have given estimates showing that to work the existing spinning equipment fully on the pre-war pattern there is at present a shortage of some 70,000 workers. They evidently believe that within the practicable future this deficiency cannot be met. We admit the present labour shortage. We believe, however, that a part of this deficiency can be met (without increasing the fatigue of the

operative and probably reducing it) by improved organisation within the mills which, without any large scale re-equipment, would increase the output per head of the existing operatives. We think that in any case there may be, because of a recent tendency of the industry to move on to coarser counts, a bottle-neck at the carding stage which would make the real shortage of spinning labour smaller than the figure given above. We consider that it is highly premature, in view of the fact that during 1946 over 4,000,000 persons will be released from munitions and the services, to conclude that the industry will not be able to find the operatives required for full running. It must be remembered that only 40 million spindles and 470,000 looms remained in place in 1939 out of the 63 million spindles and the 792,000 looms in place in 1924. Further, a substantial part of the present machinery, even perhaps as much as 40 per cent. of the looms in some factories, will be displaced if effect is given to what we understand are the recommendations of the Committee appointed by the Chief Inspector of Factories to examine working conditions in cotton mills.

21. If, however, the view were accepted that there is a large and probably permanent shortage of labour we feel that this, in itself, would dispose of the case for a redundancy scheme. For if there is machinery but no labour to work it, that machinery cannot contribute to " weak selling " of the kind we had before the war.

22. Every industry at all times contains surplus machinery capacity which causes no trouble and calls for no special " scheme " to deal with it. Most industries work only one shift—there is then theoretically a large surplus of machine capacity. Many industries deliberately keep stand-by plant. In any healthy industry there are always new entrants forcing their way in and tending to create surplus capacity. Indeed some authorities hold that under a policy of full employment there should always be more vacancies (i.e., more factory space and machinery) than labour available.

23. It is sometimes argued that through a redundancy scheme it should be possible by a " once for all " surgical operation to get the industry on a firm and stable basis from which it need never depart. This is a static view of the industry which, in our opinion, might be extremely dangerous. Many important changes, such as the increased use of automatic looms and of two shift systems, may take place in the cotton industry in the next twenty years, all of which will create surplus capacity. Indeed, the confidence shown by all members of the Working Party in the value and importance of scientific research itself implies an assumption of rapid technical change in the future. If the tradition is created within the cotton industry that no one should get rid of an old machine or close down altogether unless the remaining firms pay him to do so then the burden of redundancy levies or charges will steadily accumulate. The industry will then be at a serious disadvantage as compared with industries in other countries which do not place these burdens on the progressive and efficient.

24. All the recommendations for dealing with redundancy which have been put before us insist that the schemes should be " voluntary " in the sense that the owner of a factory should be free to sell out or not as he wishes. But this would provide no guarantee that the least efficient units would be closed down first. It is true that if efficient units were purchased under a redundancy scheme they might be re-sold, in whole or in part, for operation but even in that case there is a danger that the complex combination of factors which results in an efficient working unit might be seriously disturbed. To be logical the redundancy scheme should, therefore, be compulsory. Compulsory closing

down, however, in turn would involve some central body in the prolonged, costly and, as we believe, virtually impossible task of ranging all the firms in the industry in terms of efficiency.

25. The cost of any redundancy scheme cannot be ignored. Any type of redundancy scheme creates a class of pensioners and the cost must be borne by somebody. If it is met by a straight levy on all firms in the industry then it would be added to cost of production, and reduce competitive power. If it is met by the taxpayer then it is difficult to defend this additional imposition. In so far as the pensioners invest the sums they receive outside the industry, the effect of the redundancy scheme is to drive capital out of the industry.

26. The present price of textile machinery—new or second-hand—is very high and probably much higher than it will be a few years hence. The scheme would, therefore, be very costly. All redundancy schemes in the past, whatever their other deficiencies, have had the merit of purchasing surplus machinery during periods of depression when prices were very low. A redundancy scheme carried out in the next few years would mean the buying-out of "surplus" machinery when its price was high—the pensioners would be enabled to liquidate at the top of the market.

27. There is a serious danger that when a redundancy scheme is in operation, or is understood to be imminent, in an industry, firms which would have gone out of business in any case will hold on in the hope of gaining a financial advantage from the sale of their assets under the scheme. The normal process of industrial readjustment would thus be positively impeded.

28. It is sometimes argued that most of the foregoing difficulties could be overcome by purchasing machinery and simply immobilising it, bringing it back into use if, in fact, labour becomes available. We doubt whether this is a wise policy. For if those who advocate it have sufficient confidence in their forward estimates of labour supply to go to the trouble and expense of a redundancy scheme they should follow their conclusions to the logical conclusion and sell the machinery abroad. In the period of scarcity the nation cannot afford to hold unnecessary stocks.

29. The only argument in support of a redundancy scheme in which we find substance is that there are still some mills in Lancashire closed down under the concentration scheme. As they are opened up, it might prove impossible to staff all the mills fully with the available labour force and part-time running might increase costs. Since labour cannot be directed, it is argued, some mills should be closed down in order to concentrate labour in a limited number of mills.

We have given serious consideration to this argument but we feel unable to accept it. In the first place the argument turns on an assumption of widespread and prolonged labour shortage. On that point we have expressed our doubts above.* In the second place some of the troubles feared would, we believe, cure themselves. A labour shortage encourages firms to adopt labour-saving devices. All firms can achieve some measure of long-term internal contraction without any substantial increase in costs. Yet others would, by competition, be driven out of the industry altogether (at least one case of this has already been recorded). In the third place a scheme for buying up mills to be voluntarily offered by the seller would not necessarily result in closing down units in the areas where labour is shortest. In the fourth place a scheme for lopping off parts of the industry would have a bad psychological

* Paragraph 20.

effect. It could hardly be carried out without causing some disturbance to labour. It might impede the present labour recruitment programme. It might create the impression, for which we believe there is no foundation, that the cotton industry must suffer further decline.

Further, our colleagues apparently believe that, unless redundancy is dealt with positively, firms will compete to force up wages to higher levels than can be permanently maintained. We feel that there may be a danger of this. But it is due mainly to the general shortage of labour, to the competition of other industries with the cotton industry for the limited labour supply, and not especially to conditions within the industry. This is a problem that can only be satisfactorily dealt with for industry as a whole. Indeed the greater the diversification of industry brought about in Lancashire as a result of the policy of a balanced distribution of industry the less effective would be any measures for dealing with the problems of the cotton industry in isolation. This is a broad question of national policy which is beyond our terms of reference.

30. We conclude that the danger of maldistribution of labour in the cotton industry within the next two years is probably less than our colleagues imagine, but that in any case we do not consider that a redundancy scheme is an effective way of bringing about the appropriate distribution of labour.

Section III

INCREASED MECHANISATION AND RE-EQUIPMENT

31. *We wish to state at the outset that we are convinced of the need for increased mechanisation and re-equipment. Some of us, indeed, are associated with firms which were foremost in technical re-equipment before the war and which at present are busily engaged upon further substantial measures for increasing mechanical efficiency.* The important issues, however, are as to the timing of increased mechanisation and re-equipment and the manner in which the decisions regarding it are reached and implemented. Unless the correct procedure is followed the real efficiency of the industry may be impaired, serious inequity result and national resources be wasted.

32. In this connection we do not approve the Re-equipment Levy, with its concomitant Re-equipment Board suggested by our colleagues. Indeed we consider that the levy might well delay, rather than expedite, re-equipment in its most appropriate forms. The grounds upon which we reach this conclusion can, however, only be properly understood by examining in some detail the problem of increased mechanisation and re-equipment in the industry.

Re-Equipment, Costs and Prices

33. The variety of conditions in the Lancashire cotton industry is so great that virtually any generalisation is dangerous. But we feel it would be misleading to hold out the hope that, under present conditions, simply by adopting general re-equipment, costs and prices could be generally and substantially reduced. This conclusion might, of course, have been deduced, by those who are not prepared to deny normal business instincts to those running the cotton industry, from the fact that the introduction of new machinery has been relatively slow. The case of the automatic loom in Lancashire is illustrative of the general point. In the past 50 years some manufacturers have found it worth while to introduce automatics. Others, retaining the Lancashire loom on the four-loom or more-looms system, have found it possible to continue to compete. It has always been in the past (and must remain in the future) a matter of judgment in individual cases—the decision depending upon the type of cloth to be produced, the character of the labour available, the wage rates ruling and the nature of the market to be served.*

34. Before turning to a more detailed examination of the cost figures, we wish to emphasise that we do not minimise the importance of what may be termed non-cost factors in decisions regarding re-equipment. There may be important psychological results arising from re-equipment which every business must take into account. The installation of new machinery and modern methods in a mill may create, both among the workers and the managerial staff, a bouyant outlook, a feeling of keenness which is of great value in maintaining a high pitch of effort.

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* There seems to be a popular impression that all expanding cotton manufacturing industries have turned over largely to automatic looms. This is far from being the case. In 1938 the proportion of automatic to total looms for different countries was as follows: U.S.A., 70 per cent.; Japan, 12 per cent.; Italy, 23 per cent.; Germany, 9 per cent.; France, 20 per cent.; Russia, 10 per cent.; India, 2 per cent.; Brazil 5 per cent.; U.K., 3 per cent.

35. The Working Party has had access to detailed costings prepared by its Costs Sub-Committee. Because of the variety of product and working conditions in the industry no set of costings can do more than examine typical cases. We have no doubt that other groups of cloths than those chosen by the Costs Sub-Committee would have revealed different results. But the costing information has been drawn up by those in, or in close working contact with, the industry and must, therefore, be accepted as throwing some light upon this vital subject.

36. We give in the Appendix* a detailed analysis of these costings and the conclusions which we think should be drawn from them. The conclusions can be summarised as follows:—

(*a*) if a new cotton firm were setting up, which would have to meet capital charges, whether for old type or new type machinery, on the basis of existing prices for equipment, a margin of advantage varying from 1 per cent. to 7 per cent. of total cost would lie with the automatic looms high draft system on a double day-shift as against the traditional system with Lancashire looms on single shift.

(*b*) on the other hand, in the case of the six cloths examined, a firm with existing equipment of the traditional type which, anticipating a reduction of machinery prices in the future, did not depreciate on the basis of the present high replacement costs, or which was prepared to forego depreciation on its existing equipment rather than incur the loss of scrapping it completely, would probably show lower costs than a firm created *de novo* at the present time.

(*c*) in the case of the six cloths examined we have not yet reached the critical point which makes re-equipment imperative—the point at which the total costs under the new method are lower than the prime costs, (i.e., total costs less capital costs) under the old.

(*d*) if the case for re-equipment is to be discussed from the point of view of the present national shortage of labour it is necessary to bear in mind the labour needed to produce the new equipment. When this is taken into account there is no evidence that re-equipment will mean an overall economy of labour.

The Element of Speculation in Re-Equipment

37. We re-iterate that it would be a mistake to attach undue importance to this sample (or indeed any sample) of costings. It is, indeed, well known that many firms are now engaged in re-equipment and that the orders placed for new textile machinery for the home market are large. The reason lies partly in the fact that for some cloths the advantage of new equipment is greater than for the sample of cloths taken, partly in those non-cost factors already referred to and partly in the speculative elements in the decisions made regarding re-equipment by individual firms. If, for instance, it is contemplated that wages will rise further in the future or that, once automatic looms come into wide use, increasing experience will make it possible to use many more looms per weaver, then the case for installing new machinery is strengthened. On the other hand, if it were thought that the cost of new machinery would be lower in the future then it might be preferable to hold off for the moment. In the case of each firm there will be many intangibles of this kind to be considered in the final decision.

* See page 275

The Need for Selectivity in Re-equipment

38. One conclusion stands out clearly from this argument. It is that any policy of re-equipment must be highly selective. The circumstances of each firm will differ with the character of its present equipment, the markets it serves, the judgment of its owners as to future prospects. Many firms have already placed large orders for new machinery despite the risks and uncertainties of the time. Their judgment must be respected. Others feel that, in their case, re-equipment is not justified and are seeking ways of increasing mechanisation without the purchase of new equipment. These decisions, too, in the light of all the circumstances surrounding them, may be correct. But there would be no such selectivity if general re-equipment were advocated as a cure for all evils, if schemes were imposed upon the industry which relieve the individual of the responsibility of making such decisions or which confuse the issues for him by offering inducements diverting him from the search for the most economic manner of running his own business.

39. It remains to determine how best re-equipment can be encouraged without endangering the selectivity of the process.

The Influence of Higher Wages

40. There is one influence which will in many instances bring powerful pressure upon employers within the next few years to install more modern machinery. It is the recent increase of wages rates in the cotton industry. In the past, in all countries with relatively high standards of living* the wages paid to cotton workers, especially to men, have been low in relation to wages in other industries. But in recent years in this country cotton wages for men have steadily moved up the wage scale from virtually the bottom of the list.† And further wage increases have taken place since the last census of earnings in July, 1945.

41. Wages increased in the cotton industry between 1938 and 1945 more rapidly than in the generality of industries.‡ But they are still, except for juveniles, somewhat below the average for industry as a whole.

Average Hourly Earnings in the Cotton Industry and all Industries, July, 1945

	Cotton	All industries
	s. d.	s. d.
Men (21 and over)	2 2·0	2 5·3
Boys (under 21)	1 2·2	1 0·0
Women (18 and over)	1 4·8	1 5·5
Girls (under 18)	11·6	9·7
All Workers	1 7·2	2 0·3

* Cotton wages in the United States were before the war among the lowest of all factory employees in the country. Before the war, in the United States, Great Britain, Canada, Germany, France and Italy, wages for men in the cotton industry were usually less than two-thirds of those in engineering.

† Thus the Ministry of Labour Census of Weekly Earnings in 1935 listed 219 separate industries. Only five of these 219 industries showed earnings for men over 21 years of age below the earnings of men in the cotton industry. In the Census for January, 1945, 91 industries were listed and nine industries showed earnings below those for cotton. In the Census for July, 1945, 94 industries were listed and 23 industries showed earnings below those for cotton.

‡ Thus between October, 1938, and July, 1945, average hourly earnings (all classes of workers) increased in the cotton industry by 106 per cent.; in all industries listed in the Census of Earnings the increase was 77 per cent.

42. So long as a condition of active employment is maintained in the United Kingdom as a whole, so that alternative employment is available, the employers in the cotton industry will be compelled, if they are to retain their labour, to offer wages and working conditions which do not compare unfavourably with those in other industries. This will force employers to discover ways of increasing wages without a proportionate increase in cost, One of the general ways of doing this is to provide more mechanical equipment per worker. The balance is, therefore, being very steadily tipped in favour of more equipment and less labour for each unit of output.

43. It might well be held that this upward movement of wages, arising out of a scarcity of labour, would be sufficient to bring about re-equipment at something like the right rate and in the right places. But we feel that it is legitimate to argue that in the industries which were depressed before the war and in which there are many uncertainties regarding the case for re-equipment some special inducements are justified to encourage business men to take risks which at the moment deter them.* The cotton industry can be held to be one of these industries. But if serious waste of material resources is to be avoided then we consider that all inducements should be avoided which :—

(*a*) Discriminate against the firm which does not need to re-equip.

(*b*) Discriminate against the firm which does not choose to join any particular amalgamation.

(*c*) Discriminate against the progressive firm which re-equipped before the war and has followed a prudent policy in the writing down of its capital.

(*d*) Increase the cost of the non-re-equipped firm in order to enable firms which have high costs, due to re-equipment, to compete more effectively with it.

(*e*) Generally increase costs.

The Financing of Re-equipment and the Re-equipment Levy

44. Whilst it is true that the large orders already placed for new textile machinery suggest that there are substantial resources for re-equipment available in the industry it seems to be the case that the majority of firms have not under their own immediate control sufficient liquid assets to undertake extensive re-equipment.

45. On the other hand, the following points should not be overlooked :-

(*a*) The present tax arrangements whereby 20 per cent. of the original cost of new machinery can be written off within the first year of the life of new machinery should, and will, in our opinion, constitute a strong incentive to the purchase of new machinery where this is economically justifiable. We agree with our colleagues that consideration should be given to some modification of taxation policy to increase further the incentive to re-equipment.

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* I accept this conclusion, but I think it is important to be quite clear what it amounts to. This can be illustrated by a hypothetical example. If the market rate for borrowing for investment in the cotton industry is 5 per cent. and, through Government assistance, the cotton industry is offered capital at 2 per cent. then the cotton industry is being subsidised to the extent of the difference (it is interesting in this connection to note that all the costings submitted to us include 5 per cent. as interest on capital). I accept the conclusion, however, because, provided the amount of capital is not excessive and is an offer only for a limited period, it may be justifiable, in the circumstances in which the cotton industry finds itself, to provide a fillip in order to encourage employers to be a little more optimistic about those " non-cost " advantages of re-equipment which have been referred to earlier.—J. Jewkes.

(*b*) If a price policy such as we recommend below is pursued the increased profits which should accrue in the next few years of a seller's market should provide further liquid resources for ploughing back into the industry.

(*c*) The two new finance companies—the Finance Corporation for Industry and the Industrial and Commercial Finance Corporation—set up recently under the aegis of the Bank of England are now in a position to assist individual firms with loans at reasonably low rates of interest.

(*d*) The cotton industry can, of course, raise capital through the usual banking channels.

(*e*) Under the Borrowing (Control and Guarantees) Bill it is contemplated that a considerable sum will be made available annually for industrial reorganisation and re-equipment.

46. We do not feel that these facilities, taken together, should be inadequate for any legitimate needs of the industry provided capital is not driven out of the industry by redundancy schemes. If, in fact, such inducements were insufficient to lead the industry to re-equip there would be a strong presumption that, in the national interest, capital could be more usefully employed in other directions.

Price Policy and Re-equipment

47. At the present time practically all the prices which a spinner or weaver (or merchant in the home but not in the export market) receives for his services have an official upper limit. The need for a firm grasp on domestic prices—as a part of an anti-inflationary policy—is indisputable. But the present arrangements mean that the prices paid to the spinner and weaver for those of their products which pass indirectly into the export trade are also fixed. The prices at which the Lancashire merchant sells in the foreign market, however, are not fixed unless the Government of that foreign country imposes a price control on cotton cloth within its own boundaries.

48. We do not think that the merchant has taken undue advantage of the position in which he has been disposing of his goods in a sellers' market whilst buying his cloth at low fixed prices. He has been kept in check by his desire to retain his goodwill for post-war trading—there is evidence, for example, that the prices of British cloth in South Africa during the war have at times been considerably lower than the prices of comparable Brazilian cloth. In some cases, too, he may have had no incentive to raise his prices because he had reached his E.P.T. limit and saw no advantage in mulcting his foreign consumer in the interests of the British Treasury (a danger which has recently been reduced by the lowering of the E.P.T. percentage).

49. It is, however, highly anomalous that when producers in the British cotton industry are anxious to accumulate funds for re-equipment they are completely shut out from a share in the advantages of a temporary sellers' export market and that the whole of any such gains should pass either to the merchant or the foreign consumer. And it is at least arguable that, given our desperate position in the matter of foreign exchange, we could and should take advantage of the present sellers' market without, however, fixing our export prices so high as to endanger our long-term export prospects.

50. The problem, therefore, is how best to release producers from price control for those of their goods which are to be exported without forcing up

the domestic price level. This is largely an administrative problem upon which we would not presume to judge except to stress that the benefit to be derived from freedom of prices for export are so attractive that administrative niceties, or even some administrative risks, should not be allowed to stand in the way.

51. Our tentative suggestion would be along the following lines. Sufficient control should be retained to guarantee that essential supplies for the Government and for the home market, including Utility cloths, should be met. The price control for finished products in the home market would be retained. But for goods going to export, control over margins should be lifted. It might be argued that producers, in the present sellers' market, would raise their margins unduly and cause excessive price increases in export goods. But the merchants could presumably exercise some controlling influence over this increase. If it were considered that this control would be inadequate then maximum margins for spinners and weavers higher than those ruling in the home market could be enforced. In some way or another, however, it seems essential for the future prosperity of the industry that producers should not continue for the next two or three years making goods for foreigners at the meagre margins now enforced upon them in order to prevent a rise in the cost of living at home.

The Case Against the Re-equipment Levy and the Equipment Board

52. To sum up: we feel that the present circumstances are highly favourable to the kind of selective re-equipment needed in the cotton industry. It is no exaggeration to say that a new and more progressive spirit is at work. The shortage of labour and the improved wage level are forcing employers to consider re-equipment which before the war was certainly not economical. If export prices can be released from control the producer should be in a position to finance this re-equipment. But the Re-equipment Levy and the Equipment Board would, in our opinion, disturb and delay this selective and discriminating process. A levy which is uniform for all firms cannot meet the varying needs and conditions of the individual firms. The Equipment Board might, we think, delay rather than expedite re-equipment. We cannot see how an Equipment Board can be in as good a position as the individual firm to reach these decisions in which commercial judgment and assessment of risk must always play a large part.*

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* I personally see other objections to the proposed Re-equipment Levy.

(*a*) Firms might merely deduct from the sums they intend to spend on re-equipment what they contributed to, and drew back from, the central fund. The Levy would, therefore, not necessarily increase the net sum devoted to re-equipment.

(*b*) The Levy would lead to inequity. There may be many firms with mule spindles or plain looms which do not need to re-equip. There will be other firms which re-equipped before the war and can carry on quite efficiently without additional equipment. Both these groups will be compelled to pay the Levy.

(*c*) I cannot see the case for associating the Levy with an increase of prices. For if re-equipment brings lower costs, why the need for the higher prices? And if re-equipment does not bring lower costs, why the re-equipment itself?—J. Jewkes

Section IV

INCREASED MECHANISATION—SOME GENERAL CONSIDERATIONS

53. There are certain general points bearing upon the mechanical efficiency of the cotton industry and upon the pace at which re-equipment should, or can, go on which must not be overlooked.

The Efficiency of Production in the Lancashire Cotton Industry

54. There is a disposition to regard the prolonged and painful struggle for readjustment by the British cotton industry between the wars as evidence of the fundamental inefficiency of its technical methods and its personnel. That view is superficial and inaccurate. Able and ambitious young people are inclined to steer clear of a declining industry and the cotton industry has suffered in this way. And it is arguable that the preoccupation between the wars of some parts of the industry with schemes of restriction unnecessarily prolonged the life of some of the weak units of the industry. Taking all the circumstances into account, however, the British cotton industry put up a fine performance between the wars in its struggle with the low wage countries. In the crucial eleven years between 1924 and 1935 it is true that, by value, exports of British cotton cloth dropped from 54 per cent. to 40 per cent. of total world trade in cotton goods, whilst the corresponding proportions for Japan rose from 11 per cent. to 29 per cent. But other countries, often held out as models of industrial efficiency, also suffered severely. The proportion of world trade enjoyed by the United States, for example, fell from 6 per cent. to 4 per cent. In export markets before the war it was in fact Japan and Great Britain in the lead and the rest relatively nowhere.

International Comparisons of Output per Man

55. In particular, misleading deductions are now being widely made regarding the need for wholesale re-equipment in Lancashire on the basis of comparisons of output per man in the American and British cotton industries. It is, of course, absurd to use, as an index of general efficiency, figures of output per head which do not even take into account the labour employed in the making of the machinery used. In any case to compare the American industry —with its vast and highly protected home market and its minor interest in exports—with the British industry—which exports half its products to markets all over the world—is to compare organisations which are geared up for entirely different functions. It would not be surprising if they found it necessary to adopt different methods for carrying out these different functions.

56. Sweeping generalisations should not be made on the basis of existing figures of output per head since there are fundamental statistical difficulties in making these estimates. But even if the statistics could be refined, and the circumstances of the British and American cotton industry were comparable, the fact that output per head was higher in the American industry than in the British due to a higher degree of mechanisation would not of itself warrant the deduction that the British industry should copy American methods and embark on increased mechanisation. The higher degree of mechanisation which the Americans have adopted might be quite inappropriate in the circum-

stances of the general British economy. The only criterion of whether we should embark upon increased mechanisation here now, is not whether such mechanisation would increase output per head to the level of that in American industry, but whether mechanisation here can reduce costs sufficiently to make it profitable.

57. Comparisons of output per head with America are at least useful in making out a *prima facie* case for investigating American methods to determine whether methods are being used there which are not being employed by the British manufacturer.* But when the British manufacturer comes to decide whether to introduce such methods here he should be guided by considerations of cost and price after the proper claims for satisfactory working conditions and wage levels have been met. It would be a mistake if the cotton industry, by comparisons of output per head, were encouraged to take its eye off the problem of costs and to plunge for a higher output per man for its own sake.

The Need for the Utmost Economy in Capital Investment in the Immediate Future

58. In the next five or ten years the resources of this country will be strained to the utmost. There will be a serious competition between investment and consumption, between putting resources into machines or into the bellies of the people. There will be many strong claimants for the resources devoted to investment—the building programme, the delayed maintenance of wear and tear in industry, the reconstruction and replanning of our towns. We do not, of course, suggest that the claims for re-equipment for industry should be ignored, least of all the claims for the cotton industry. But we cannot afford luxuries in the way of capital equipment in the cotton industry unless there are solid and indisputable gains to be derived from each pound spent in this way. Large-scale re-equipment will certainly involve the purchase of some machinery from America and other countries: the choice might well then be between the import of food and the import of machinery. Moreover, it will be important to avoid re-equipment which, through its attendant disturbances, would mean any serious loss of production in the immediate future. We shall need every yard of cloth which can be produced in the next three years.†

The Advantages of the Traditional Equipment

59. Whatever the gains to be derived in the production of certain cotton products from the use of modern automatic looms and ring spinning some part, perhaps a considerable part, of the traditional Lancashire machinery must be retained if the industry is to produce goods which can be sold. It is, for example, very widely held both by producers and merchants that a considerable number of mule spindles must be retained to provide types of yarn, essential for many of our high grade cloths, which cannot be produced, or cannot be produced as satisfactorily, on ring spindles. Again, for some types of cloth and for the meeting of these orders which cannot provide long and continuous running, the Lancashire loom has many advantages. For certain types of

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* Thus the report of the Cotton Textile Mission to the United States of America shows that the American industry has a much higher P.M.H. than the British industry in the winding and beaming processes. But in mule spinning where the yarn is delivered in the cop form the American practices could not be followed in this country.

† There is one further point to which I personally would attach importance. The present prices of textile machinery are high. Over-hasty re-equipment in Lancashire might permanently load on to the industry here capital charges higher than those in other countries which have already re-equipped or which might re-equip later at lower prices.—J. Jewkes.

cloth it may be essential, for others it has advantages. But, broadly speaking, an industry which relies upon quality and diversity, upon meeting exactly the expressed needs of widely varying markets, would be foolish to discard the whole of its Lancashire looms.

Possibilities of Increased Mechanisation without Re-equipment

60. It is sometimes assumed that increasing mechanisation inevitably involves the buying of new equipment—e.g., new automatic looms or new ring spindles. This is far from being true. Increased mechanisation can be brought about on a wide scale in the cotton industry by reorganising the use of existing machinery. The Evershed Commission Report indicated ways in which economy of labour was possible in spinning. The most important case of this lies, however, in the weaving industry where there are several less sweeping methods by which efficiency can be increased without the introduction of automatic looms. One obvious way would be to reorganise weaving sheds so that each weaver, with proper assistance either from mechanical devices or from ancillary labour, is able, instead of working with four looms, to operate six, eight or more Lancashire looms. This method is often just as economical and sometimes more economical, than the introduction of automatic looms.

61. Now, wherever the six or more looms system is as economical as the automatic looms system, giving just as high wages and enabling Lancashire to sell cloth at as low a price, there is this enormous advantage in it: that the resources which otherwise would go into the making of automatic looms would be saved for the nation.

62. We subscribe to the recommendation of our colleagues that a Committee should be called together to examine methods of wage payment in the weaving industry. We consider that such a Committee should, *inter alia*, especially concern itself with the following questions:—

(*a*) What are the practicable and economic limits to the use of existing equipment in the weaving industry on the more-looms system?

(*b*) What conditions must be satisfied if such a system is to operate without undue strain on personnel?

(*c*) What methods should be adopted to prevent any evasion of such conditions?

Section V

SOME MISCELLANEOUS RESERVATIONS

63. There are several less general points in which we wish to put in a word of reservation :—

(*a*) In paragraphs 14, 15 and 31 of Chapter III of the Report of our colleagues there are certain statements relating to raw cotton and rayon prices which might, we think, be misunderstood. In order to guard against any false inferences being drawn from them we must make clear our view that these fluctuations were the normal results of the operation of supply and demand and that the existence of the Liverpool Cotton Market not only enabled spinners to cover themselves against the risks involved but actually tended to reduce the range of fluctuation.

(*b*) We have accepted Recommendation II in the Report of our colleagues because we consider that a fuller examination is called for into the textile machinery industry and because the collaboration between the cotton industry and the textile machinery industry can never be too close. But we should dissent from the idea that an " ordered programme for the supply of textile machinery " means that every firm should be compelled at short notice to lay down in detail all its machinery requirements for the next five years, and place firm orders for that machinery forthwith. That would be far too rigid an arrangement at a time when the future trade outlook is so perplexing, when important technical changes are in the offing, when no spinner or manufacturer can possibly know what machinery he will be allowed to import. The whole question should be handled in a flexible way by collaboration between the reconstituted Cotton Board and the textile machinery industry, as the varying circumstances of the time dictate.

(*c*) We have accepted Recommendation VII of the Report of our colleagues for the provision of a modernised mill in each important centre. But we would stress that such a scheme will hardly help recruitment to the industry unless more than physical conditions and amenities are considered. More important than physical conditions are correct handling of labour and good personnel management and working methods that are least fatiguing and most satisfying to the operator. Such points will have to be carefully considered in selecting mills.

(*d*) We have accepted Recommendation XXX regarding the continuance of a central organisation for the cotton industry as a whole because we consider that the Cotton Board has, since its inception, proved invaluable in a great variety of ways. It has successfully built up for itself, among workers and employers, a fund of goodwill essential for close, voluntary co-operation between the different sections of the industry. We agree that, in future, the Cotton Board should

be tri-partite. Apart from this change, there is much to be said for preserving, as far as possible, the Board's continuity in form and procedure. On the whole we would prefer not to elaborate the constitution of the Board in the manner suggested by our colleagues. Since the future success of the Board will turn so largely upon its willing acceptance by all sections of the industry, we think it wise not to prescribe in detail the Chairmanship, form, powers or functions of a reconstituted Board until the industry has had an opportunity of putting forward its views on these matters.

Section VI

CONCLUSIONS AND RECOMMENDATIONS

1. We accept Recommendations I, II, VII–XXV, XXVII, XXVIII, and XXX–XXXIV.

2. We see no advantage in further amalgamations in the cotton industry except for those which come about on a voluntary basis and are specifically created to increase efficiency and reduce costs. We cannot, therefore, accept Recommendations IV and VI.

3. We cannot accept Recommendations V and XXVI for redundancy schemes in the cotton industry.

4. The orders placed for new machinery indicate that the plans for re-equipment in the industry are now extensive. We believe that large-scale re-equipment will be needed in the industry in the next decade. The natural conditions favour that re-equipment. The recent increases in wages have made economical re-equipment which would not have been commercially justified before the war. But the conditions within the industry are so diverse that this re-equipment must be highly selective if waste of national resources is to be avoided in this period of shortage. The individual firm, fully acquainted with its own peculiar circumstances, is in the best position to make correctly these investment decisions. We consider that a uniform equipment levy, imposed statutorily upon the whole industry, would disturb this principle of selectivity. And we feel that the Re-Equipment Board associated with it would delay, rather than expedite, re-equipment. We cannot, therefore, accept Recommendations III and XXIX.

5. We feel that, in the drive for efficiency, low costs and expanded exports, it is vital that the individual business man should be left with all those obligations and functions essential if he is to take risks and work under a sense of personal responsibility. Recommendations III, IV, V and XXIX would, in our opinion, weaken that sense of responsibility and lessen the disposition to take risks.

6. We recognise the challenge that such an attitude places before the business man, but we believe it is a challenge to which the industry would respond and which would, in itself, engender confidence.

We think there is much to be gained from a firm statement by the Government indicating that, in this case, free enterprise means free enterprise; outlining the reasons why the present fundamental problems of the cotton industry are at poles apart from those which existed before the war and why the pre-war restrictive thinking is out of date; describing the important part which cotton exports can play in assisting the country at this crisis in our economic affairs; recognising the formidable struggle which confronts the industry; indicating that nothing short of supreme efficiency will lead to a successful outcome of that struggle; reiterating that the industry was to be left largely to face its own problems and that restrictive practices would

be actively discouraged; and detailing the steps to be taken to give as free play as is possible, subject to the remaining exigencies of the transitional period, to individual enterprise and initiative.

7. We believe that one of the first, and most important, measures to restore initiative and create the means for re-equipment would be to relax the present price controls so that, even if maximum prices have still for a time to be maintained in the home market, the producers would be enabled to obtain a better return on those products made for the export markets.

8. The need for the utmost economy in the use of our national resources in the immediate future gives special importance to methods of supplementing any new re-equipment which may be carried out by using existing equipment more scientifically, thus increasing output per head and rendering possible the payment of higher wages. We recommend that a joint committee should be set up forthwith to examine this question.

9. We make minor reservations on Recommendations II, VII and XXX.

C. B. CLEGG.
E. L. HIRST.
J. JEWKES.
A. G. SHAW.
A. V. SYMONS.
W. M. WIGGINS.

EXPLANATORY MEMORANDUM BY MR. GRIFFIN, MR. KNOWLES, MR. NAESMITH AND MR. ROBERTS.

We have been forced to add this explanatory memorandum to our signature to the main Report, not because we are half-hearted in our support for its conclusions and recommendations, but because the presentation of a Dissenting Memorandum by some of our colleagues in the final stages of our discussions has made it necessary that we should state clearly the understanding on which we have been ready to give our support.

The recommendations depend for their success on a recognition by all concerned in the cotton industry that a concerted and co-operative effort is now necessary to get through a difficult period of transition. We have been ready to play our part in such an effort and to use our influence to support it. We accepted the invitation to serve on the Working Party in that spirit. In doing that we understood that it was not the Government's policy to nationalise the cotton industry, provided that the system of private enterprise could operate it efficiently and in conformity with the national interest. We concluded, therefore, that we were required to recommend arrangements on that basis. We have done our best to collaborate in devising such arrangements. We believe that much can be accomplished on these lines, *but only if the representatives of capital display a readiness to co-operate in the same spirit.* If the employers say " Hands off, leave us alone," that makes it hopeless to seek a solution along the lines on which we have tried to work in the Working Party.

But that, unfortunately, seems to us to be the spirit in which the Dissenting Memorandum is written.

Behind all its ingenious argument we see two main thoughts :—

Firstly : " You must trust each employer to know what is best for his own business and leave him to settle his course without any suggestion of fitting in to a common plan."

Secondly : " If you want to get more production, the chief way to do that is not to improve mechanical equipment, but to get more out of the workers."

As to the first point, our answer is that, on their past record, we are not prepared to trust the whole body of employers to be far-sighted and progressive. Some of course will be ; but we have to look at the employers as a whole and to the interests of the workers as a whole. We have also to look at the general circumstances of the industry in its relation to the overriding needs of the nation.

In answer to the second point, we say that we are quite prepared to join in developing ideas for improving the " deployment of labour," etc., but we cannot allow such ideas to be used as a pretext for not giving the workers the best possible tools to work with, and we are not prepared to collaborate in developing such ideas unless there is clear evidence on the employers' side that they are ready to join in the sort of programme which is recommended in the main Report.

We do not propose to deal at length with the Dissenting Memorandum, but we must refer briefly to a few illustrations of the contradictions, inconsistencies and unrealities which it reveals. We call attention to these points

because it is things like this that make us suspicious of the motives at work behind it.

As our first illustration we refer to the question of so-called " redundancy." The modest proposal on this matter contained in the main Report was based largely on the report of the Machinery Sub-Committee which included two of the employers' representatives on the Working Party. Both these gentlemen have since signed the Dissenting Memorandum. We quote below in parallel columns some relevant passages from each document.

EXTRACTS FROM DISSENTING MEMORANDUM	EXTRACTS FROM MACHINERY SUB-COMMITTEE'S REPORT
(12) In any case we differ from our colleagues regarding the need for dealing immediately with the so-called problem of " redundancy."	A redundancy scheme should be prepared taking into consideration the possible development of 2-shift working, and put into operation as soon as possible. We consider in fact that our slogan should be " fewer and better mills " and that this can be least wastefully achieved by a redundancy scheme to take in the surplus plant in all sections.
(16) Our colleagues are, throughout their report, gravely concerned with the problem of redundant capital equipment and they propose a series of operations for dealing with it. . . .	
(19) But pre-war experience and pre-war controversy are now irrelevant.	
(20) The present times would in any case be highly inappropriate for carrying out such schemes. . . .	
(21) If the view is accepted that there is a large and probably permanent shortage of labour this in itself would dispose of the case for a redundancy scheme. . . .	
(24) All the recommendations for dealing with redundancy which have been put before us insist that the scheme should be " voluntary " in the sense that the owner of a factory should be free to sell out or not as he wishes. But this would provide no guarantee that the least efficient units would be closed down first. . . . To be logical the redundancy scheme should, therefore, be compulsory. Compulsory closing down, however, in turn would involve some central body in the prolonged, costly and, as we believe, virtually impossible task of ranging all the firms in the industry in terms of efficiency.	We should meet the criticism that on a voluntary basis the least efficient plant might not be the plant that was offered by the suggestion that the authority controlling the scheme should only scrap plant that was inefficient and be prepared to sell efficient plant that might be acquired to firms remaining in business in exchange for old plant which they would surrender for scrapping.

These quotations may be left to tell their own story, though we must add that the Dissenting Memorandum completely ignores the fact that the key idea of the main Report is throughout founded on the recognition that the problem of surplus capacity in the old sense has disappeared.

As a second illustration we must point out that the Dissenting Memorandum expects Government intervention :—

(*a*) to carry out successfully a full employment policy;

(*b*) to provide loans at low rates of interest supported by Government guarantees for the textile industry (a rate of 2 per cent. as compared with a normal rate of 5 per cent. is suggested) ;

(*c*) to have an investigation made into the textile machinery industry and to control the prices and production of machinery for the benefit of the textile industry.

We cannot understand how the signatories to the Dissenting Memorandum can expect the Government to carry out such policies and to give their help to cotton industry employers, if the latter, when it comes to their own business, are to be allowed to say " Hands off. Every employer knows better than anybody else how his own concern is to be run."

As a third illustration we call attention to the fact that the Dissenting Memorandum recognises the probability that labour shortage, leading to competition for labour, may drive up wages to uneconomic levels and it takes the line that this should be dealt with by " a policy for industry as a whole " (paragraph 29). This is a very vague expression, but, judging by the first draft which we saw of the Dissenting Memorandum, the signatories have in mind what has been commonly known as a " national wages policy."

We can only interpret this as meaning that they ask for complete *laisser faire* for the employers but want a national policy to regulate wages.

Finally we call attention to the fact that the Dissenting Memorandum professes to recognise (paragraph 4) that the industry must operate " within the broad lines of policy laid down by the Government." When, however, any practical measures are suggested for seeing that the industry does operate in this way it becomes a case of " free enterprise fussily fettered by the State." (We specially quote these last words because the document is full of tendentious verbiage of this kind.)

The plan proposed in the main Report should, in our view, be regarded by the Government, the public and the industry as a sincere attempt to devise arrangements to help Lancashire towards a prosperous future by means which, while they provide for Government support and concerted action on the points where those are necessary, at the same time would leave individual firms full scope for initiative and enterprise. We repeat that we have taken the responsibility for supporting these proposals because we have understood it to be the Government's policy to proceed on these lines, and we have done this in spite of the fact that, according to our own faith, we should have preferred to work for a plan of complete socialisation of the industry. Having taken up this position, we are not going back from it. We therefore recommend the Government to submit the plan to the industry as proposed in the main Report. If the industry then has the good sense to respond, we can go ahead together on a hopeful line. But if they follow the advice of the Dissenting Memorandum, then we foresee most serious trouble and we reserve for ourselves complete liberty of action. We shall in fact in that event be forced to regard a policy of nationalisation as offering the only solution.

THOS. GRIFFIN,
ALBERT KNOWLES,
ANDREW NAESMITH,
ALFRED ROBERTS.

NOTE BY PROFESSOR JEWKES

BULK PRODUCTION, MERCHANTING METHODS AND THE FUTURE OF THE LANCASHIRE EXPORT TRADE

1. I would go further than some members of the Working Party in stressing the importance of variety and quality in our cotton products if exports are to be maximised; in avoiding any schemes of mass production or bulk sales which endanger this variety and in emphasising the crucial necessity for flexibility in Lancashire's merchanting organisation.

Quality in the Export Trade

2. Since 1913 there has been a steady improvement in the quality of the cotton goods exported from this country. This improvement is not easy to measure, but the tables below show that, between 1913 and 1924, and again between 1924 and 1938, export trade has been lost largely in those markets where the value per yard of our exports was lowest. These figures confirm the views of those most closely in touch with the many textile markets that, despite appalling difficulties between the wars, Lancashire held on in a commendable fashion to the quality trade whilst being ousted from the lower quality markets by low-wage competitors.

TABLE I

Classification of Fifty-Three Important Export Markets according to Value per 1,000 yards of Exports in 1913, showing Percentage decline in each Group 1913-1924

Group of Markets with 1913 value per 1,000 linear yards	Total Exports in 1922–24 of Cotton Piece Goods (by linear yardage) to each group. 1913–100
Up to £14	50
£14–£17	56
£17 and above	114

Classification of Export Markets according to Value per yard of Exports in 1924, showing Percentage decline in each Group 1924-1938

Group of Markets with 1924 value per square yard	Total Exports in 1938 of Cotton Piece Goods (by sq. yardage) to each group. 1924–100
Up to 7¾d.	16
8d.–9¾d.	39
10d.–11¾d.	35
Above 11¾d.	76

3. This movement of Lancashire trade into higher quality products has been a grim economic necessity. The production of the cheaper types of cotton

cloth is one of the simplest tasks in the whole range of industrial activity. British exporters, therefore, have found themselves progressively deprived by low-wage countries of the markets for the simpler and cheaper goods.

4. The same point can be indicated in another way. World trade in cotton goods is essentially a *marginal* trade. In most countries the vast proportion of the consumption of cotton goods is provided from domestic production. Foreign trade in cotton goods must lever itself through steadily narrowing cracks. How small is the percentage margin between domestic consumption and domestic production in many countries is shown in the table below.

TABLE II

Share of Home Trade Market Held by Domestic Producers of Cotton Manufacturers, Selected Countries. Recent Years*

Country		Cotton Piece Goods per cent. of consumption domestically produced
United States ...	(1933)	99·5
India	(1935)	76·5†
China	(1934)	87·5†
U.S.S.R. ...	(1934)	99·9
Japan	(1935)	99·9
Germany ...	(1928)	92·9
U.K.	(1934)	98·5
Italy	(1934)	99·2
France	(1932)	99·0
Brazil	(1929)	93·5
Netherlands ...	(1933)	89·5
Canada	(1934)	74·8
Belgium ...	(1933)	92·9
Rumania ...	(1934)	88·1
Switzerland ...	(1929)	88·8

5. This move towards domestic production will undoubtedly continue. Within a measurable time, there will be virtually no part of the world where the production of the lower qualities of cotton cloth will be impossible or even uneconomic.‡

6. The future of the British cotton export trade must lie in the higher quality goods where our comparative advantage will be greatest. There is more than one way of improving quality. The use of high grade raw material; the skilful use of that raw material in the factory; ingenuity of design and finishing of cloth; subtle and energetic marketing to place in the hands of the consumer exactly what he wants, can all be combined to reach the desired end.

It would, in my opinion, be a fatal mistake to allow the claims for mass production, standardisation or bulk selling to conceal the increasing reliance which ought to be placed upon the disposal in the markets of the world of quality products, fashioned in detail to suit the demands of the consumer.

* "The World Textile Industry," p. 175. International Labour Office. 1937.

† Excluding hand spun yarn and hand woven cloth, in 1929 hand loom production estimated as constituting over 25 per cent. of total consumption in India and over 70 per cent. in China.

‡ The value of textile machinery exported from the United Kingdom alone in the years 1924–44 amounted to £160,000,000.

The Merchanting of Lancashire Exports

7. The growth of the British export trade in cotton goods is historically bound up with the success of the Lancashire merchant, but he has, in recent years, been the subject of severe attack. The first general criticism of the present merchanting organisation is that there are " too many merchants." Fortunately, on this point, the facts have been recorded in great detail.* In 1940 about one half of the total export trade was carried out by 44 merchant-converters. Four-fifths of the export trade was in the hands of 198 merchant-converters. The vast bulk of the trade, therefore, was conducted by a small number of firms. It is true that the total recorded number of merchant-converters for the export trade was 1,200, but of these, 450 exported tiny quantities incidental to other main activities and would not have considered themselves as exporters. Of the remaining 750, many were much more interested in the home than in the export trade.

8. The appropriate number of merchants required for a given volume of trade clearly turns on the nature of that trade and here the important fact to be taken into account is the very wide range of export markets in which trade has to be carried on. There is, in fact, a very high degree of specialisation among merchants. " It is the exception rather than the rule for the converter, and especially the market leaders, to be important in a wide range of markets. The market leaders appear only in their own or allied and similar markets. They have won their premier position by concentrating on the market and acquainting themselves thoroughly with its idiosyncracies rather than by reason of their possessing a particular technical capacity for producing cotton cloths." Kenyon, from his detailed statistical analysis of market specialisation has reached this conclusion : " If it is agreed that at least the top fifth of the converters in each market are necessary to bring the full flow of orders from each market, it follows that 563 converters at least are essential to the cotton industry."

9. It does not appear that Lancashire creates serious economic disadvantages for herself by the present number of merchant-converters. Some inefficient merchants there may be. It is for that reason important to restore competition between merchants in order to eliminate the weak units.† It may be that, under the present abnormal circumstances, there may be too many merchants. But there is a sellers' market now which will certainly not last for many years. Lancashire will soon need the capital, the experience and the skill of all the good merchants available.

10. It is often alleged that, because of the multiplicity of merchants, producers can be played off one against another, particularly in periods of shortage of trade and that, in consequence, the producer is impoverished without any additional trade being obtained. This reasoning is fallacious. Lower prices must in any case increase demand. It is not the multiplicity of merchants which forces down producers' margins. The playing off of producers one against another could be carried out even more ruthlessly if there were but one merchant having a monopoly of the whole trade. In any case, this situation is dependent upon weak selling of a kind which, fortunately, need not be expected to recur.

*They are given in a very able paper by Mr. E. Kenyon " The Shape and Size of the Export Merchanting Section of the Cotton Industry," read before the Manchester Statistical Society in October, 1944.

† See para. 22.

11. It is often doubted whether the merchant-converter is fully conscious of the need, in the interests of economy, to give large orders to the manufacturer thus enabling him to run his machinery for long periods on a limited number of cloths. I say something below regarding the economies of continuous running. This criticism of the merchants is largely a legacy of the period between the wars when the intensity of competition forced merchants frequently into excessive variation and frequent "debasement" of cloth. In practice, however, the majority of merchants before the war operated with a limited number of weaving firms. It is clearly in their own interests to do so, for they naturally wish to attach themselves to a group of weavers who best serve their needs, upon whom they feel they can rely and who can quote lower prices consistent with continuous running. Nevertheless, there are certain special aspects of the relation between weaver and merchant on which recommendations are made below.*

12. The criticism of the merchant has, in some instances, led to even less well-founded attacks. There are, for instance the charges that the merchant has ceased to perform his traditional functions of risk-taking and carrying stocks and that his margins are excessive. These allegations are not supported by facts. The evidence suggests that before the war the merchant frequently went too far in taking business that was not credit-worthy. The merchants have proved in evidence that stock holding is perhaps an even more important function now than it was before the last war. I know of nothing which suggests that the margins of exporting merchant-converters are excessive.

STANDARDISATION, CONTINUOUS RUNNING AND MASS PRODUCTION

13. A machine which has to be stopped and adjusted for the making of a somewhat different product loses time and money. But there is no particular advantage in extending mass production and continuous running beyond the point at which it brings economies. In this connection I believe that two statements are true of the cotton industry :—

(*a*) The advantages of mass production in the cotton industry are reached at a very early stage. Economy of production and an enormous variety of production are quite consistent aims. For example, in a weaving shed of 600 looms it would probably be sufficient for the attainment of minimum costs if 20 different cloths were each being produced continuously on batches of 30 looms. That is to say that the weaving industry, with its 400,000 looms, might be producing very many thousands of cloths without sacrificing any of the economies of quantity production. Further, the loom has to be stopped periodically to renew the supply of warp yarn. At that point it is quite feasible to change the type of cloth being produced without loss. Similarly in a spinning mill of normal size there is room for the production, in the most economical manner, of several ranges of counts yarn.

(*b*) Even, however, if it could be proved that (say) 60,000 looms producing the same cloth continuously could make economies in production, I do not think that would be the end of the matter. For the selling of the cloth cannot be ignored. In a market which is as variable in its demands as is the export market for cotton cloth, a mass production unit of this kind would be giving many hostages to fortune. When the mass-production unit was ultimately compelled to change its product, the change would be sharp and drastic. The experience of mass production of cloths in America, with its periodic gluts, well exemplifies the rigidity of bulk production.

* See paras. 28 and 29.

14. The economies of continuity, therefore, lie much more in keeping the individual batch of looms or frame of spindles on the same product for a minimum period than in keeping whole mills indefinitely on a single product. A selling policy in which the emphasis is upon quality, design and variety is not in serious conflict with production policy aimed at minimum cost.

The Relation between Producers and Merchants

15. It is for these reasons that I fail to see any deep-seated conflict of interests between producers and merchants in the cotton industry. It is true that the producer seeks for continuous running, the minimum of change in his product and a price high enough to cover his capital costs and that the merchant's anxiety is to avoid ordering or stocking of goods which he will not be able to sell or granting credits which will prove bad. But the cotton industry is not peculiar in having to resolve this conflict between the economies of production and the nice adjustment of goods to consumers' tastes. In industries where the same firm both produces and merchants the conflict is present. A struggle will always go on between the production department of a firm and its merchanting department; the former advocating continuity; the latter pressing the claims of the consumer. There is no reason to believe that such a firm will resolve its problem any more skilfully than does the cotton industry. The only difference is that, in the case of the cotton industry, the divergence of view comes into the open. In other industries it is conducted behind the closed doors of one firm. Indeed, as indicated above, the Lancashire cotton industry, with its highly flexible machinery and organisation, will, during periods of normal trade, have an advantage in this matter over industries where production must necessarily be programmed for long periods ahead, as in motor car production. Provided, always, that the merchant is conscious of the all-round advantages of placing as large orders as possible (and I think he is) and the producer quotes prices which reflect the variations in costs of "runs" of different size (and on this I accept the recommendations of my colleagues).

The International Significance of the Merchanting System

16. The Lancashire merchanting system, in many ways, is better described as a world merchanting system. Many of the merchants have agencies or branches in the countries in which they operate. Through these connections they sell large quantities of cloth which is not manufactured in this country and thereby increase our invisible exports. It is, of course, all to the good that in those ranges of cotton products which cannot be produced economically here we should as far as possible obtain the profits on their sale.

17. If the Lancashire merchant were hampered by centralised schemes for the rationalisation of his activities he would, in many cases, divert his energies to the selling of foreign produce and thereby endanger our own export trade. Those who most strongly criticise the efforts of the Lancashire merchant in selling Lancashire cloth are usually prepared to agree that he sells foreign cloth with skill and success.

Defects of the Existing Merchanting System

18. Most of the criticisms of the merchanting system are based upon the prolonged pre-war periods of weak selling. The atomising of orders, the "debasement" of cloth, the pressure upon the producers' margins—all these worked through the instrument of the merchant, but they were fundamentally due to the real shortage of demand before the war. In this sense, therefore, pre-war experience may be misleading as a guide to the manner in which the merchanting system will operate so long as weak selling does not recur.

19. There are, however, two other imperfections of the merchanting system of a more permanent kind. The consumer when purchasing cloth is concerned with appearance, with durability and with price. The technique of the industry is so varied that cloths of given durability, which even to a highly discriminating consumer would appear to give exactly the same appearance, can often be made in many ways. In production the main variables are the type and " mixing " of raw cotton, the method of spinning the yarn, the structure of the cloth and the type of finishing. These, and other variables, can be used in many different combinations to produce what, in the consumers' eyes, are the same thing. Some of these combinations may be cheaper to produce than others. The merchant, in placing his order for cloth, will specify, within wider or narrower margins, what these variables should be. But, at least in some cases, the full technical knowledge of the spinner or weaver is not used in choosing the most economical combination. The producers, that is to say, may be working " blind." They may be putting into their product, and thereby increasing costs, characteristics unnecessary for the purpose for which the cloth is needed. They may have been in a position, if fully consulted, to make economies without detracting from any of the qualities upon which the consumer places emphasis.

20. Further, I believe that there is some truth in the assertion that the Lancashire exporting merchant, in some cases, does not get " near enough " to the final consumer of cloth. Generalisations on this subject are as dangerous as they are easy to make. Many merchants have their own " houses " in foreign markets. Others have sole agencies. I do not suggest that merchants, as a rule, would find it worth while to enter upon the appallingly complex and extremely costly task of actual retail distribution over the whole world, or that, indeed, they would find it possible to compete, in countries with low standards of living, with existing retailers. But sufficient success seems to have been achieved by some firms in controlling their goods to a very late stage in their final sale to make it worth while encouraging more extended efforts of this sort.*

21. To sum up, the future of the Lancashire export trade lies in increased emphasis on quality and variety, and not in the mass production of standardised goods in which low-wage competition would certainly overwhelm us. This calls for a highly flexible merchanting organisation roughly of the type which the industry now possesses. The present organisation is not free from defects, but they are defects which should be, and can be, removed without destroying the essential features of the present merchanting system. The crucial test of the efficiency of this system is to ask whether it has yet been improved upon by any other country or by any other organisation in the world for the disposal of cotton cloth. The evidence suggests that Lancashire cloth has been marketed with unsurpassed energy and skill. In these circumstances it would be unwise to attempt to modify the system except by piecemeal and cautious experiment.

Conclusions and Recommendations

22. I consider that the measures required for toughening the present merchanting system are as follows.

The Abolition of Export Allocations

During the war the export allocation system for cloth took the double form of allocation by market and allocation by merchant. The volume of exports to each market was fixed; within that volume each merchant was

* See para. 29.

accorded a quota depending upon his sales to the market in 1940. The result was that each merchant had a prescribed right to his place in the market and competition between merchants virtually ceased. Since the prices paid to producers were fixed and the prices obtainable in export markets were not usually fixed, and since a sellers' market existed, the position of the merchant was an enviable one. Such conditions, however, do not make for efficiency, and it is important to restore competition between merchants as quickly as possible.

23. In recent months greater flexibility has been introduced into the allocations system, but a further loosening up would bring many advantages. The first stage in the return to normal competition should be to abolish allocations to merchants ; no one, under free enterprise, should have a prescriptive right to a given volume of trade. The second stage should be to abolish allocations to markets. The post-war pattern of world trade may be very different from that ruling before the war. The rapid readjustment of the merchanting organisation to the new conditions will be retarded unless merchants have the freedom to test out the selling possibilities all over the globe. There appears to be only one difficulty in a rapid restoration of this kind of freedom. During the period of scarcity the Government may feel under an obligation to guarantee to certain markets, particularly some of the Colonies, a minimum supply of cloth. If allocations to markets were abolished these obligations might not be met, and if allocations to merchants were discontinued there might seem to be no obvious way in which, even if market allocations were fixed, these allocations could be enforced.

24. On that I have two comments. The first is that if there are to be minimum allocations to some markets, the markets should be kept as small in number as possible and the allocations as low as possible. The moral obligations to the more distressed parts of the world may be strong and it is understandable that the Government Departments whose concern it is to watch the interests of these areas should make large claims on our limited output. But these responsibilities should be fairly matched against the knowledge that the permanent shape and size of our cotton export trade to the more profitable and permanent markets will be largely determined within the next few years, that the economic strength of this country must turn upon its exports, and that if the channels of our cotton exports are too much distorted by temporary emergency claims then irreparable damage may be done to the prosperity of Lancashire.

25. The second is that the more flexible the arrangements for meeting the minimum needs for some markets the better. In my opinion, if the Government were to abolish merchant allocations altogether and simply make its minimum demands for certain markets known through the Cotton Board, the Board, in consultation with the merchanting associations, could easily arrange that these minimum demands are satisfied through voluntary arrangements.

The Personnel in Merchanting

26. I agree with my colleagues that it is important to get into the cotton industry more people with a scientific training and outlook. I think it is even more important to do everything possible to maintain and improve the quality of the personnel in merchanting. It is easier to train a scientist than it is to train a good merchant for the many-sided activities he must perform and the many aptitudes he should possess. And the popular discredit into which merchanting has fallen gives little encouragement for young men to enter the profession.

27. Formal training in universities and other institutions for posts demanding high administrative or commercial qualities is not, as yet, very far advanced, and it is a matter of doubt as to how far higher education can be relied upon to produce the qualities required. But some outstanding merchanting organisations in the industry have derived great advantages in the past from the judicious absorption of university men, as trainees, into their organisations. The proportion of failures in this process will always be large, but the small percentage of successes bring great returns. I would like to see the number of university graduates taken into the cotton merchanting firms increased in the next few years. University training in economics and commerce may have some advantages for this purpose, but I would not confine any scheme to such trainees. The reconstituted Cotton Board might appoint each year to its own staff a number of university graduates who would be given an opportunity, whilst working for the Board, to watch the whole process of marketing from the centre, but who would be regarded as normally passing out in a year or two to strengthen one or other of the merchanting firms. The Board in this way would constitute a nursery for guaranteeing a steady flow of ability to the industry. One hundred men of high quality placed in responsible posts in this way over five or ten years, would bring much more solid results than a mountain of structural reorganisation. There are some other minor measures which I think might yield results :—

(1) It is possible that the decline in popularity of the Royal Exchange has reduced contacts between manufacturers and merchants. If this is the case, it should be possible to arrange suitable opportunities by means of conferences, works visits, discussion groups and possibly social events, which would provide opportunities for contacts. Younger members of firms in particular, both from manufacturing and merchanting houses, should be encouraged to associate.

(2) While profound technical knowledge is not a prime necessity in merchanting, a minimum of technical knowledge is essential. Encouragement might be given to merchants to attend refresher courses in various aspects of textile production. Incidentally there is a terrible shortage of good text-books on textile matters, and the possibility of financing the production of these is worth the attention of the Cotton Board.

Experiments in Vertical Integration

28. I consider that, with the active co-operation of a reconstituted Cotton Board, encouragement should be given to the formation, on a voluntary basis, of " clubs " of merchants and producers, for pushing a specific product or for the fuller exploitation of a specific market. There are, indeed, some very interesting experiments already going forward on this basis. A notable example is provided by the Shirley cloths, the quality of which is being maintained by the Ventile Association of spinners, weavers, finishers, converters and garment makers. Other associations should be considered for types of cloth which are particularly subject to debasement.

29. I think that there is also a good case for experiment with a limited number of tighter and more formal vertical integrations between merchants and producers. The initiative for these should come from the industry itself. They would have to be groups most carefully chosen to provide the correct balance of manufacturing and merchanting capacity and to control the disposal of goods to a very late stage in marketing without destroying the advantages of specialisation by product or by market. But a strong stimulus to the building up of such integrations would be provided if the State would offer to approved schemes, where necessary, capital at favourable rates of interest.

JOHN JEWKES.

APPENDIX I (CHAPTER III)

WAR-TIME PURCHASE AND SALE OF RAW COTTON

1. Since 1941, the purchase and importation of raw cotton has been in the hands of the Cotton Control and the Liverpool futures market has been closed. The operations of the Control were necessarily influenced by war-time factors, (e.g., shipping and exchange difficulties, and the need to ensure supplies suitable for meeting the abnormally heavy demand for certain types of yarn such as coarse yarn for canvas and very fine yarns for balloon and parachute fabrics) rather than by the considerations (price, spinning values, colour, etc.) which in peace time determine the spinners' choice of which cotton to buy. The Control have also been faced from time to time with the physical shortage of the types of cotton they would have preferred to obtain. The prices at which the Control could buy were also affected by war-time factors, so that the normal parities as between different types of cotton were completely upset. In these circumstances it would have caused chaos in the U.K. industry and inequity among individual firms had the Control attempted to relate the selling price for any particular growth to the price paid for that growth. In order to preserve as great a degree of equity as possible among consumers and to maintain sufficient stability of yarn and cloth prices both for Government purchases and for ordinary civilian supplies (and especially for the Utility scheme) the Control based its prices for the different types of cotton not directly upon the cost of each type but in a manner designed to secure that the prices charged reflected the proper relationships between the types, having regard to the spinning qualities of each, while the total amount received for all cotton sold was sufficient to meet the total cost of purchasing it. The Control had the advice of a committee of spinners and raw cotton merchants in deciding the relationship between the different types. The prices fixed according to this method were changed only three or four times since 1941. Two all-round reductions, first of ½d. per lb. and later of a further 1d. per lb. were made in order to offset the effect of wage increases. This method of subsidising cloth prices was recognised to be unsatisfactory, especially as it entailed a subsidy for exports which had no need for such assistance, and when a more elaborate scheme for holding down the price of Utility cloth by a subsidy payable on grey cloth, was introduced in 1944, raw cotton prices were put up by 4½d. per lb. all round. This increase was reckoned to be adequate to enable the Control to cover its costs at that time except for extraordinary war-time elements such as inflated freight charges and war risks insurance. The Control continued meanwhile to buy where it could but the prices paid bore no relation to the selling prices. On some growths the selling prices involved losses, on others substantial profits.

2. This system for determining the selling prices of cotton did not, of itself, give spinners an assurance in advance against fluctuation in price even though, in practice, the prices were rarely changed. In order to provide cover, therefore, the Control first introduced a system whereby it gave a forward undertaking to sell to spinners cotton at the current prices, subject to a limit of the amount of cotton required to meet a 16-weeks' order book. Later, the Control, being anxious to disperse its stocks of raw cotton and to free warehouse space as much as possible, encouraged spinners to buy and store supplies of cotton in excess of the quantities required to meet their current yarn orders. Arrangements were then made in this connection whereby when cotton prices were altered spinners were reimbursed, or were surcharged on their excess stocks according to whether the price change was down or up.

3. The war-time system for handling raw cotton has proved satisfactory in the special conditions which apply in war-time. Spinners have from time to time complained that they were unable to obtain the types of cotton they require but occasional difficulties of this sort are inseparable from war. One effect of the present methods to which we should draw attention, however, is the effect of our raw material prices on the prices of our yarns and manufactures in overseas markets. This is one of the many factors which complicate estimates of the probable future of the U.K. cotton industry based on conditions as they exist to-day.

APPENDIX II (CHAPTER VI)

REPORT OF THE COSTS SUB-COMMITTEE

1. Our terms of reference were :—

"To investigate costs and costing methods in the cotton textile industry with a view, in particular, to ascertaining, from the experience of cost investigations during the war or otherwise :—

(*a*) what savings in costs can be achieved by the industry as now equipped, through the introduction of longer runs ;

(*b*) how costs of production would be affected by the installation of new machinery efficiently used ; and

(*c*) whether standard costing methods can be evolved with special reference—

(i) to providing an index of the efficiency of individual firms ;

(ii) to providing a basis for prices."

2. A list of specific questions was also furnished to us as a rather more detailed guide to the points upon which the Working Party looked to us for information.

3. In the time available we have not been able to deal exhaustively with these questions. Indeed some we have not been able to deal with at all. Nevertheless, although it hardly comes within our terms of reference to say so, we fully recognise the value to the industry of objective and fully documented answers to all these questions, not particularly as illustrating the position at any one time, but continuously brought up to date as a guide to action and development.

4. In the limited time available to us we have felt it best to concentrate upon the use of specific cost information already available. This has not in all cases been in the most convenient form for our purpose, but we felt it was essential to depend only upon facts, and it would have taken weeks or months to collect new data.

5. We have concentrated mainly upon (*b*) in our terms of reference, feeling that the work involved in this would provide the answer to some of the other questions.

6. In order to be definite we selected six typical cloths, representing a wide range of productive equipment and practice. Each has been costed on the basis of present day common practice and then for comparison on the basis of certain assumed degrees of re-equipment.

7. Since we are comparing costs of mills containing equipment of different values it has been necessary to make some provision for capital charges, both depreciation and interest.

8. In doing so we wish to emphasise that the rates we have used do not necessarily represent our views as to the proper level of capital charges to include in prices, which normally depend upon market conditions as well as upon the necessity of prudent provision for eventual re-equipment and upon the remuneration of shareholders or other providers of capital.

9. Whatever views may be held on these matters we hold unanimously that both depreciation and interest should, for costing purposes, be based upon current replacement value of plant, not only because that value alone provides a definite objective basis but also because current values are normally the best index of the prices at which eventual replacement will take place.

10. Basing then on current replacement values, we have allowed for depreciation at a rate which will write off the machinery by equal annual instalments in twenty years when working single shifts and in fifteen years when working double shifts.

11. In making this distinction we are assuming that depreciation allowances contain, or should contain, an element both of obsolescence and of wear and tear. We hold that this should be the case and that the emphasis placed upon the latter element by the Inland Revenue authorities is prejudicial to any attempt to keep industry up to date. Comparatively large allowances for obsolescence in one or two years are not enough. Such a concession is valueless unless a sufficient margin to cover the allowance appears in the price. It is sounder, in our view, to recover the cost of the plant regularly throughout its useful life.

12. As regards the present replacement cost of machinery, we are indebted to the results of the investigations made by the Machinery Sub-Committee.

13. We have made one exception, for special reasons, to the general rule of basing capital charges on current replacement cost. This is in regard to buildings. In view of the present very high cost of building, the likelihood that homes will have first call on the limited building capacity for some years to come, and the fact that a great many of the present cotton mill buildings are capable of efficient use for many years to come; we have felt it sufficient to take account of buildings at 1939 values, and to provide for replacement in fifty years.

14. Nevertheless, when conditions have become more settled, and it is possible to take a more realistic view of building trends, we believe the industry should apply the same general principles to buildings as to machinery in computing capital charges.

15. For interest we have included 5 per cent. of the full replacement value of fixed stock (1939 values for buildings) and 5 per cent. of average working capital, irrespective of whether single or double shifts are assumed. We would again emphasise that in using these rates we are not suggesting that they are proper for price fixing purposes. As we are dealing with costs we would have preferred to avoid all reference to interest on capital employed, but for the reasons stated in paragraphs 7 and 8 felt we could not avoid doing so.

16. Costing information has been provided by members of the Sub-Committee from their own experience and by the Costings Branch of the Ministry of Supply from data collected during the war.

17. As regards the capital charges, it appears that on single shift working the mill re-equipped with new types of machinery is more expensive than the

mill with the present types of machinery, slightly in spinning and very heavily in weaving.

18. With double shift working in the re-equipped mill (80 hours per week) as against single shift working (48 hours per week) in the present mill, capital charges are lower in spinning but higher in weaving. Taking the two together the total of capital charges for 100 yards of loom state cloth is greater in all cases except one (where it is equal) in the re-equipped mill than in the present mill.

19. Against the greater capital charges there is the off-set of saving in working costs, though in this connection we have assumed that the wages paid for each shift of 40 hours in double-shift working will be the same, other things being equal, as for 48 hours single shift. This reduces the savings in working cost available to offset the increase in capital charges.

20. The following table brings out the main points.* It is theoretically possible to envisage many permutations of shifts and methods of production in spinning and weaving. With a view to crystallising the main possibilities the table below shows five variations for each cloth. Finishing costs are excluded from the table. We had not sufficient information to deal in the same way with finishing as we have with the earlier processes.

The spinning figures show the same trend for each cloth. A re-equipped mill on high draft could produce a little more cheaply, even on single shift than a mill operating as at present. On double shifts the saving is increased to about 10 per cent. of the present conversion cost (that is excluding the raw cotton content). These comparisons are based on the assumptions in regard to capital charges which we have described above.

In weaving there is much more variation according to the type of cloth. Two shift working with eight Lancashire looms per weaver shows no advantage generally over single shift working but with automatic looms, owing to the higher capital charges, two shift working shows a substantial advantage over single shifts. The cost relation between automatic looms and eight Lancashire looms depends on the nature of the cloth. Generally, the automatic loom shows to best advantage on low pick, coarse weft cloths. The saving on both automatic and eight-loom weaving tends to be greatest where the construction of the cloth demands a high piece-rate under the uniform list. The coloured-woven shirting illustrates this point. It will be noticed that for the hair cord there is little saving from the use of the eight-loom system and the automatic loom cost is actually higher than that of the present four-loom system.

Even in the most favourable circumstances the savings in total cost are not startling. They are of the order of 5 per cent. or less of the present price. The relative saving will, however, increase when the wage advance recently granted to weavers becomes effective and when the Evershed Report is implemented. Moreover, it must not be forgotten that even though the total cost may not be greatly reduced there are the advantages of greater output per operative and shorter hours (on two shifts) with no less earnings for the workpeople.

We have not been able to present any corresponding figures for rayon cloths. So far as weaving is concerned, the remarks we have made about the possible saving in cases where the Uniform List provides a high piece-rate apply even more to rayon than to cotton. For cloth constructions where the eight-loom system shows advantage for cotton we should expect to find that it showed even greater advantage for rayon.

*Annexe 2 to this Appendix presents the material in this table in another form.

Cost Comparisons for Selected Cloths

Pence per 100 yards loom state

Cloth	Process	Low Draft 4 Lancs. Looms 1 Shift—48 hrs.			High Draft 8 Lancs. Looms 1 Shift—48 hrs.			High Draft 8 Lancs. Looms 2 Shifts—40 hrs.			High Draft Auto Looms 1 Shift—48 hrs.			High Draft Auto Looms 2 Shifts—40 hrs.		
		Cost	*I & D*	*Total*	*Cost*	*I & D*	*Total*	Cost	I & D	Total	Cost	I & D	Total	Cost	I & D	Total
Drill	Raw Cotton	547	—	547	538	—	538	538	—	538	542	—	542	542	—	542
30″ 96×48	Spinning	179	67	246	163	71	234	181	49	230	166	71	237	183	49	232
16s. and 12s.	Weaving	209	33	242	227	33	260	249	22	271	170	64	234	183	44	227
	Total	935	100	1,035	928	104	1,032	968	71	1,039	878	135	1,013	908	93	1,001
Lining	Raw Cotton	556	—	556	556	—	556	556	—	556	544	—	544	544	—	544
56″ 71×96	Spinning	243	171	414	216	189	405	240	130	370	212	189	401	235	130	365
32s. and 30s.	Weaving	497	137	634	448	137	585	484	92	576	373	275	648	399	187	586
	Total	1,296	308	1,604	1,220	326	1,546	1,280	222	1,502	1,129	464	1,593	1,178	317	1,495
Poplin Shirting	Raw Cotton	397	—	397	395	—	395	395	—	395	395	—	395	395	—	395
32½″ 118×70	Spg. and Dblg.	623	366	989	(*b*) 621	366	987	(*b*) 692	274	966	(*b*) 621	366	987	(*b*) 693	274	967
2/80s. and 50s.	Weaving	595	59	654	572	59	631	630	40	670	485	117	602	523	80	603
	Total	1,615	425	2,040	1,588	425	2,013	1,717	314	2,031	1,501	483	1,984	1,611	354	1,965
Cambric	Raw Cotton	393	—	393	390	—	390	390	—	390	390	—	390	390	—	390
32½″ 72×68	Spinning	144	79	223	129	85	214	143	58	201	131	85	216	144	58	202
22s. and 20s.	Weaving	208	43	251	195	43	238	217	29	246	160	84	244	173	57	230
	Total	745	122	867	714	128	842	750	87	837	681	169	850	707	115	822
Hair Cord	Raw Cotton	418	—	418	418	—	418	418	—	418	409	—	409	409	—	409
37½″ 78×78	Spinning	173	112	285	154	124	278	170	85	255	152	124	276	168	85	253
28s																
40s and 30s.	Weaving	254	73	327	250	72	322	277	48	325	237	152	389	254	104	358
	Total	845	185	1,030	822	196	1,018	865	133	998	798	276	1 074	831	189	1,020
Sheeting	Raw Cotton	1,169	—	1,169	1,177	—	1,177	1,177	—	1,177	1,146	—	1,146	1,146	—	1,146
83″ 60×60	Spinning	363	160	523	332	157	489	368	108	476	324	157	481	359	108	467
16s. and 16s.	Weaving	750	212	962	(*a*) 750	212	962	(*a*) 825	142	967	571	400	971	619	273	892
	Total	2,282	372	2,654	2,259	369	2,628	2,370	250	2,620	2,041	557	2,598	2 124	381	2,505

Winding and beaming of warp yarns are included with spinning.

(*a*) Three to four looms per weaver.

(*b*) Low draft spinning.

For automatic weaving, direct spun ring pirns are assumed (except where doubled yarns are used).

For 8-loom weaving, re-wound pirns are assumed for the drill and shirting, and large mule cop for the other cloths.

In such cases a suitable reduction is made in the weft waste allowance.

For automatic weaving, it is assumed that the warp yarns in the drill and cambric will be raised from Cotton Control Price Schedule RD to RF.

21. Turning to (*a*) in our terms of reference we find ourselves unable to give definite information from data available at present. On this question assumptions appear to us dangerous and as regards actual experience, the longer runs achieved during the war have been accompanied by other abnormalities. The difficulty is to isolate one cause from many and so to measure its effect.

22. Nevertheless, and subject to the warning against too hasty conclusions given in the last paragraph, certain facts in relation to weaving may be relevant.

23. When price control of weaving was about to be introduced, it was assumed that the average value of output per loom would be about £150. This was based on pre-war experience of a few typical firms, allowance having been made for changes in values. The first cloth price control Order was based on pre-war cost information provided by a Committee of the trade, checked by Control officials, and the aim was to provide a capital return, on 80 per cent. loom activity, of £9·5 per 40-inch loom. A profit inquiry conducted in 1943 showed the following results :—

Average Loom Width	Type of Cloth	Average Value of Turnover £ per loom	Capital Return £ per loom
40 ins.	Heavy	363	33·4
40 ins.	Light and Medium	250	19·5
45 ins.	Medium	167	17·7
53 ins.	Medium	247	27·6

In each group, over 90 per cent. of the cloth output was controlled by the Order.

Errors in the original calculations are unlikely to account wholly for the excess of these figures over those expected. Most war-time abnormalities, apart from longer runs, would tend in the reverse direction, that is, to reduce turnover and capital return per loom.

In the original Order, provision was made for profit by a flat percentage addition to the total of all other items, including the yarn content. Any increase in production per loom would therefore have a two-fold effect on the profit per loom : by reducing the cost per yard of cloth and increasing the turnover per loom upon which the profit percentage was calculated.

24. As regards (*c*) in our terms of reference we are unanimous and emphatic. Even in the course of our short and specialised task we have badly felt the need of uniformity in the keeping of cost records. It is highly desirable that in each section of the industry costs should be computed in a uniform manner. We believe that much argument and time are needlessly spent upon opposing differences of meaning which are interpreted as differences of opinion.

25. Many firms may find it difficult to operate efficiently a costing system sufficiently comprehensive to serve the needs of the larger firms, but there need be no difficulty in modifying the system to meet the simpler requirements of the smaller firms without losing the advantages of uniformity of method and meaning.

26. We regard the keeping of expense and production records in a uniform manner as important in itself. If a firm is to achieve the maximum efficiency there must be a way of measuring the efficiency achieved, of detecting and

correcting wastage and wasteful methods promptly, and isolating and measuring the effects of modifications in technique or policy. An essential part of this work is the regular keeping of proper costs records.

27. If in addition all firms in the same section do the work in the same way, and use the same terms with the same meaning, there is a ready means available at any time for pooling information for the benefit of all, without any need for disclosure of business secrets to business rivals.

28. In this connection we would call attention to the excellent work done in regard to uniform costing methods for the weaving section by a Committee set up by the Cotton Spinners' and Manufacturers' Association. We believe the precedent set by that Committee of pooling the experience of competent cost accountants, some drawn from the trade and some from outside the trade, is a valuable one.

29. The information available to us is not sufficient to draw any safe conclusions regarding the optimum size of unit or the comparative merits of horizontal and vertical forms of structure. We believe that investigation on both points would be of value to the industry as a whole but must again emphasise that in this as well as in many other directions of inquiry, the first step must be the wider adoption of uniform methods of recording facts.

30. Question 4 in the questionnaire referred to the range of efficiency among firms engaged on similar products. The information available to us suggests wide variations in places, but further investigation points to the danger of hasty conclusions. For example, one spinner may card heavily and use low-priced cotton; another card lightly and use more expensive cotton. A comparison of the price of cotton used might suggest that the former was more efficient. A comparison of the cost of carding would reverse the verdict. There are similar cases in all sections of the industry.

31. Subject to these comments certain figures may be of interest as having some bearing on the problem, though as we have pointed out in another connection, it is not possible to isolate the effect of one factor only.

32. A profit inquiry in spinning, covering mainly the year 1944, showed the following results:—

Capital Return

Pence per spindle

	No. of Mills	Highest	Lowest	Average
Carded Mule up to 24s	18	106	26	68
,, ,, 24s to 40s	15	77	19	47
,, ,, over 40s	7	59	30	44
Combed Mule over 40s	10	76	38	62
Carded Ring up to 24s	19	352	58	168
,, ,, 24s to 40s	10	122	28	67
Combed Ring 24s to 40s	5	155	36	90

Among the factors which may have had an important effect on the variation in profits in addition to efficiency, we may mention the following:—

1. *Activity.*—During the war some areas and some mills have been less fortunate than others in the degree of activity possible with the available labour supply.

2. *Technical balance.*—Some mills have been able to continue to produce similar yarns to those spun in normal times. Others, owing to the change in war-time demands as compared with pre-war requirements, have had to upset the balance of their production seriously. This has an important bearing on cost.

3. *Raw cotton substitution.*—Some mills have been worse affected than others in having to use types of cotton different from those they would normally use.

4. *Absenteeism.*—In the last full year of war, with the average age of the industry's operatives still increasing, absenteeism was at times severe but it did not affect all districts or all mills to the same degree. It not only reduced activity but also increased costs by unbalancing the labour force and so leading to unproductive wage expenditure through the operation of the Essential Works Order.

33. We are hoping to extract some information bearing upon variations in efficiency from the results of the costing investigation in weaving conducted by the Costings Branch of the Ministry of Supply. If we are successful the figures will be forwarded.

34. The costs we have ascertained for the selected cloths show the relation between labour and other costs at each stage of production. The total proportions for each cloth may be compared as follows with corresponding results provided by Mr. Burdett from his experience with other industries.

Relation of Labour Costs to other Costs

Excluding Raw Materials and Capital Charges

Per cent. of total

	Labour Cost	Other Costs
Cotton Cloths		
Drill	57	43
Cambric	50	50
Lining	56	44
Poplin Shirting	67	33
Hair Cord	50	50
Sheeting	60	40
Hosiery	56	44
Footwear	50	50
Linen	58	42
Wool	55	45
Making-up (Clothing)	70	30

APPENDIX I, ANNEXE 1

FURTHER CALCULATIONS BY THE CHAIRMAN OF THE COSTS SUB-COMMITTEE

14th January, 1946.

Dear Sir George,

The report of the Costs Sub-Committee was produced under a good deal of pressure with the result that it is by no means as comprehensive as the members would have liked to make it, given more time. I agree with my colleagues on the Sub-Committee in this respect, but the subjects we had under review are so full of interest and lead to so many possible inquiries that I think there were definite advantages in a time limit. Nevertheless, certain amplifications of the report occur to me which you may like to have. I have not consulted the Sub-Committee about them. I could do so if you wish but that, of course, would take time. I have not departed in any way from principles agreed by the Sub-Committee.

In paragraph 20 we pointed out that the savings in cost from the use of automatic machinery (and the more-looms system) would increase as wages rise. To illustrate the point, the effect of an all round increase in wages of 10 per cent. is shown below:

Total Costs as shown in the Report

Pence per yard loom-state cloth

	Draft	Low	High	High	High	High
	Looms	4 Lancs.	8 Lancs.	8 Lancs.	Automatic	Automatic
	Shifts	1	1	2	1	2
Drill		10·35	10·32	10·39	10·13	10·01
Lining		16·04	15·46	15·02	15·93	14·95
Poplin Shirting ...		20·40	20·13(*a*)	20·31(*a*)	19·84(*a*)	19·65(*a*)
Cambric		8·67	8·42	8·37	8·50	8·22
Hair Cord		10·30	10·18	9·98	10·74	10·20
Sheeting		26·54	26·28(*b*)	26·20(*b*)	25·98	25·05

(*a*) Low draft spinning.
(*b*) 3 to 4 looms per weaver.

Total Costs with 10 per cent. Wage Increase

Pence per yard loom-state cloth

	Draft	Low	High	High	High	High
	Looms	4 Lancs.	8 Lancs.	8 Lancs.	Automatic	Automatic
	Shifts	1	1	2	1	2
Drill		10·61	10·57	10·69	10·33	10·25
Lining		16·53	15·86	15·49	16·27	15·35
Poplin Shirting ...		21·22	20·91	21·23	20·52	20·46
Cambric		8·91	8·64	8·63	8·67	8·42
Hair Cord		10·59	10·45	10·29	10·97	10·47
Sheeting		27·26	26·97	27·02	26·52	25·69

The general effect is to increase the advantage of automatic looms, two shifts over the cost of the present system and to improve the relative position of automatic looms on one shift. This last result arises from the fact that we

have assumed two 40-hour shifts with the same earnings per week as on one 48-hour shift. For comparison you might like to see what the figures would be (on present wage rates) if we assume two 48-hour shifts:

Total Costs with Two Shift Working on a 48-hour basis

Pence per yard loom-state cloth

	Draft	Low	High	High	High	High
	Looms	4 Lancs.	8 Lancs.	8 Lancs.	Automatic	Automatic
	Shifts	1	1	2	1	2
Drill		10·35	10·32	10·01	10·13	9·62
Lining		16·04	15·46	14·17	15·93	13·97
Poplin Shirting ...		20·40	20·13	19·10	19·84	18·40
Cambric		8·67	8·42	8·00	8·50	7·81
Hair Cord		10·30	10·18	9·47	10·74	9·69
Sheeting		26·54	26·28	25·03	25·98	23·76

This makes the savings from 2-shift work much more substantial and improves the position of automatic looms relatively to 8-Lancashire looms.

The results on any system are, of course, affected by the assumed price of machinery. In this report we have been guided by the information obtained by the Machinery Sub-Committee. It is of interest to see what difference would appear in the total cost if in fact machinery prices were 20 per cent. less than we assumed:

Total Costs with Machinery Prices 20 per cent less than in the Report

Pence per yard loom-state cloth

	Draft	Low	High	High	High	High
	Looms	4 Lancs.	8 Lancs.	8 Lancs.	Automatic	Automatic
	Shifts	1	1	2	1	2
Drill		10·19	10·15	10·27	9·91	9·85
Lining		15·57	14·95	14·66	15·16	14·41
Poplin Shirting ...		19·71	19·44	19·84	19·04	19·11
Cambric		8·48	8·22	8·23	8·22	8·02
Hair Cord		10·01	9·87	9·76	10·28	9·88
Sheeting		25·98	25·72	25·81	25·06	24·40

Like an increase in wages, the effect is to increase the advantage of automatic machinery and to improve the relative position of one shift working.

We omitted to state in the report how many automatic looms were assumed per weaver. The figures are:

Drill	20
Lining	16
Poplin Shirting	16
Cambric	20
Hair Cord	20
Sheeting	12

I have discussed with Mr. Sidebottom the possibility of assuming a larger number of looms per weaver, but am sorry we feel it would not be safe to do so. The numbers given above are on the high side for present Lancashire practice. Possibly more could be run, but probably only with certain other alterations, such as more ancillary labour or a lower speed of loom. Only practice could determine which would be the best combination of arrangements. Possibly the course the industry will have to follow is to instal automatic machinery and then discover by experiment what is the best way of using it. At present its use is hardly sufficiently widespread to have established much in the way of common practice. In this connection the observations of the Sub-Committee on the need for uniform costing methods is important.

At the conclusion of paragraph 20 of the report we mentioned a shorter working week with no reduction in earnings as an additional advantage to that of lower costs. We did not mean to infer that improvement in earnings per hour is not an end in itself. As a Costs Sub-Committee we naturally approached the problem primarily from the costs angle. The trend towards higher wage rates and a shorter working week in industry generally cannot be ignored.

I have already shown above the results of a 10 per cent. increase in wages. It is also of interest to study the effect on costs with present machinery and wages of reducing weekly working hours to 40 with one shift :

Total Costs, One Shift, Present Plant

Pence per yard loom-state cloth

	48 hours per week	40 hours per week
Drill	10·35	11·19
Lining	16·04	17·86
Poplin Shirting	20·40	23·18
Cambric	8·67	9·48
Hair Cord	10·30	11·37
Sheeting	26·54	29·09

These figures suggest that the only way the cotton industry could support shorter working hours and higher wages is by the use of automatic machinery working two shifts.

Yours sincerely,

(Signed). R. W. LACEY.

Sir George Schuster, K.C.S.I., K.C.M.G., C.B.E., M.C.

APPENDIX II, ANNEXE 2

SUPPLEMENTARY ANALYSIS OF COSTS

The following tables present the information contained in the table on page 254 in a form designed to facilitate comparison not only of the total costs of production for each of the cloths examined, according to the various methods used, but also of the variations in the relative importance of the factors entering into the total cost.

TABLE 1

Cost Comparisons of Selected Cloths

	Pence per 100 yards					Per cent.				
	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift
DRILL										
SPINNING										
Operating Cost	179	163	181	166	183	100	91·1	101·1	92·7	102·2
Capital Charges	67	71	49	71	49	100	106·0	73·1	106·0	73·1
Total	246	234	230	237	232	100	95·1	93·5	96·3	94·3
WEAVING										
Operating Cost	209	227	249	170	183	100	108·6	119·1	81·3	87·6
Capital Charges	33	33	22	64	44	100	100·0	66·7	193·9	133·3
Total	242	260	271	234	227	100	107·4	112·0	96·7	93·8
Total Conversion	488	494	501	471	459	100	101·2	102·7	96·5	94·1
Raw Cotton	547	538	538	542	542	100	98·4	98·4	99·1	99·1
Total—including Raw Cotton	1,035	1,032	1,039	1,013	1,001	100	99·7	100·4	97·9	96·7
LINING										
SPINNING										
Operating Cost	243	216	240	212	235	100	88·9	98·8	87·2	96·7
Capital Charges	171	189	130	189	130	100	110·5	76·0	110·5	76·0
Total	414	405	370	401	365	100	97·8	89·4	96·9	88·2
WEAVING										
Operating Cost	497	448	484	373	399	100	90·2	97·4	75·1	80·3
Capital Charges	137	137	92	275	187	100	100·0	67·2	200·7	136·5
Total	634	585	576	648	586	100	92·3	90·9	102·2	92·6
Total Conversion	1,048	990	946	1,049	951	100	94·5	90·3	100·1	90·7
Raw Cotton	556	556	556	544	544	100	100·0	100·0	97·8	97·8
Total—including Raw Cotton	1,604	1,546	1,502	1,593	1,495	100	96·4	93·6	99·3	93·2

TABLE 1—*continued*

Cost Comparisons of Selected Cloths

	Pence per 100 yards					Per cent.				
	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift
CAMBRIC										
SPINNING										
Operating Cost	144	129	143	131	144	100	90·0	99·9	91·0	100·0
Capital Charges	79	85	58	85	58	100	107·6	73·4	107·6	73·4
Total Spinning...	223	214	201	216	202	100	96·0	90·1	96·9	90·6
WEAVING										
Operating Cost	208	195	217	160	173	100	93·7	104·3	77·0	84·0
Capital Charges	43	43	29	84	57	100	100·0	67·5	191·1	132·5
Total Weaving...	251	238	246	244	230	100	94·8	98·0	97·2	91·6
Total Conversion	474	452	447	460	432	100	95·4	94·3	97·0	91·1
Raw Cotton ...	393	390	390	390	390	100	99·2	99·2	99·2	99·2
Total—including Raw Cotton	867	842	837	850	822	100	97·1	96·5	98·0	94·8
HAIR CORD										
SPINNING										
Operating Cost	173	154	170	152	168	100	89·0	98·3	87·9	97·1
Capital Charges	112	124	85	124	85	100	110·7	75·9	110·7	75·9
Total Spinning...	285	278	255	276	253	100	97·5	89·5	96·8	88·8
WEAVING										
Operating Cost	254	250	277	237	254	100	98·4	109·1	93·3	100·0
Capital Charges	73	72	48	152	104	100	98·6	65·8	208·2	142·5
Total Weaving...	327	322	325	389	358	100	98·5	99·4	119·0	109·5
Total Conversion	612	600	580	665	611	100	98·0	94·8	108·7	99·8
Raw Cotton ...	418	418	418	409	409	100	100·0	100·0	97·8	97·8
Total—including Raw Cotton	1,030	1,018	998	1,074	1,020	100	98·8	96·9	104·3	99·3

TABLE 1—*continued*

Cost Comparisons of Selected Cloths

	Pence per 100 yards					Per cent.				
	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift	L.D. 4 L. L. 1 shift	H.D. 8 L. L. 1 shift	H.D. 8 L. L. 2 shift	H.D. Auto. L. 1 shift	H.D. Auto. L. 2 shift
SHEETING										
SPINNING										
Operating Cost	363	332	368	324	359	100	91·5	101·4	89·3	98·9
Capital Charges	160	157	108	157	108	100	98·1	67·5	98·1	67·5
Total Spinning	523	489	476	481	467	100	93·5	91·0	92·0	89·3
WEAVING										
Operating Cost	750	750*	825*	571	619	100	100·0	110·0	76·1	82·5
Capital Charges	212	212	142	400	273	100	100·0	67·0	188·7	128·8
Total Weaving	962	962	967	971	892	100	100·0	100·5	100·9	92·7
Total Conversion	1,485	1,451	1,443	1,452	1,359	100	97·7	97·2	97·8	91·5
Raw Cotton	1,169	1,177	1,177	1,146	1,146	100	100·7	100·7	98·0	98·0
Total—including Raw Cotton	2,654	2,628	2,620	2,598	2,505	100	99·0	98·7	97·9	94·4
POPLIN SHIRTING										
SPINNING										
Operating Cost	623	621†	692†	621†	693†	100	99·7	111·1	99·7	111·2
Capital Charges	366	366	274	366	274	100	100·0	74·8	100·0	74·8
Total Spinning	989	987	966	987	967	100	99·8	97·7	99·8	97·8
WEAVING										
Operating Cost	595	572	630	485	523	100	96·1	105·9	81·5	87·9
Capital Charges	59	59	40	117	80	100	100·0	67·8	198·3	135·6
Total Weaving	654	631	670	602	603	100	96·5	102·4	92·0	92·2
Total Conversion	1,643	1,618	1,636	1,589	1,570	100	98·5	99·6	96·7	95·6
Raw Cotton	397	395	395	395	395	100	99·5	99·5	99·5	99·5
Total—including Raw Cotton	2,040	2,014	2,031	1,984	1,965	100	98·1	99·6	97·3	96·3

* Three to four looms per weaver. † Low draft spinning.

APPENDIX II. ANNEXE 2

TABLE 2

Cost Comparisons as Percentage of Low Draft—4 Loom Costs

	Low Draft 4 Lancs 1 Shift	High Draft 8 Lancs 1 Shift	High Draft 8 Lancs 2 Shifts	High Draft Autos 1 Shift	High Draft Autos 2 Shifts
DRILL					
Raw Cotton ...	100	98·4	98·4	99·1	99·1
Spinning ...	100	95·1	93·5	96·3	94·3
Weaving ... (20 automatic looms per operative)	100	107·4	112·0	96·7	93·8
Total Spinning and Weaving	100	101·2	102·7	96·5	94·1
Total Cost ...	100	99·7	100·4	97·9	96·7
LINING					
Raw Cotton ...	100	100	100	97·8	97·8
Spinning ...	100	97·8	89·4	96·7	88·2
Weaving ... (16 automatic looms per operative)	100	92·3	90·9	102·2	92·4
Total Spinning and Weaving	100	94·5	90·3	100·1	90·7
Total Cost ...	100	96·4	93·6	99·3	93·2
CAMBRIC					
Raw Cotton ...	100	99·2	99·2	99·2	99·2
Spinning ...	100	96·0	90·1	96·9	90·6
Weaving ... (20 automatic looms per operative)	100	94·8	98·0	97·2	91·6
Total Spinning and Weaving	100	95·4	94·3	97·0	91·1
Total Cost ...	100	97·1	96·5	98·0	94·8
HAIR CORD					
Raw Cotton ...	100	100	100	97·8	97·8
Spinning ...	100	97·5	89·5	96·8	88·8
Weaving ... (20 automatic looms per operative)	100	98·5	99·4	119·0	109·5
Total Spinning and Weaving	100	98·0	94·8	108·7	99·8
Total Cost ...	100	98·8	96·9	104·3	99·0

	Low Draft 4 Lancs 1 Shift	High Draft 8 Lancs 1 Shift	High Draft 8 Lancs 2 Shifts	High Draft Autos 1 Shift	High Draft Autos 2 Shifts
SHEETING					
Raw Cotton ...	100	100·7	100·7	98·0	98·0
Spinning ...	100	93·5	91·0	92·0	89·3
Weaving ... (12 automatic looms per operative)	100	100*	100·5*	100·9	92·7
Total Spinning and Weaving	100	97·7	97·2	97·8	91·5
Total Cost ...	100	99·0	98·7	97·9	94·4
POPLIN SHIRTING					
Raw Cotton ...	100	99·5	99·5	99·5	99·5
Spinning ...	100	99·8†	97·7†	99·8†	97·8†
Weaving ... (16 automatic looms per operative)	100	96·5	102·4	92·0	92·2
Total Spinning and Weaving	100	98·5	99·6	96·7	95·6
Total Cost ...	100	98·1	99·6	97·3	96·3

* 4 Lancs looms.

† Low draft spinning throughout.

APPENDIX III (CHAPTER VI)

A. Present Supply Position of Textile Machinery

Section	Makers	Output capacity	Plant extension	Present commitments	Destination
Spinning Machinery.	Textile Machinery Makers, Ltd. (combine).	1,200,000 ring spindles per annum (including associated preparatory machinery). Output could be doubled by devoting to new machinery the capacity now in use for spares and accessories.	New works at Barton, hoped to be available by March 1946. When functioning would increase output by 60% over programme.	£20¼ million (the total normal output of the combine is £24 million per annum).	Approximately 90% export; 10% for home use. (Makers say that for the last 20 years, 95% of new British spinning machinery has been exported).
Winding and Beaming Machinery.	Five independent firms.	Most of the machinery goes to the doubling section. Existing capacity considered adequate for any likely demand from the spinning and weaving sections.	Contemplated. Would go on shift working if necessary.	High-speed (hand) coning machines — 18 months' production. All other machinery—12 months' production. (The Abbott automatic winder is expected to be in production in this country in 12–18 months. Commitments will absorb the first year's output.)	Warp (cone) winding—45% export; 55% home use. Weft winding—27% export; 73% home use.
Automatic Looms.	British Northrop Loom Co.	Present: 100 looms per month. Projected: 300–400 per month by December 1946. 500 per month by December, 1947/June 1948 (*i.e.*, 6,000 per annum).	Would be considered, if required. Loom production could be slightly increased by devoting to it the capacity now on spares, etc.	25,000 looms.	33% for export; 66% for home use.
Other Types of Automatic looms	Various.	Estimated to be about 1,000 looms per annum.	Not known.	Not known.	Not known.
Lancashire type (non-automatic) looms.	Eighteen independent firms.	10,000 to 45,000 looms per annum on basis of 40" plain standard loom, but more elaborate looms (multi-shuttle, dobbies, towels, etc.) and wider widths entail more time and work than plains, and so the loom output depends on the type of loom in demand. Few plain looms now made for home use, but fair number for export.	None contemplated.	Vary with each firm, but on average are equal to three years' production.	Varies considerably for different firms, but the greater part of orders is for abroad (mainly India and South America).
Finishing Machinery.	Six independent firms.	Difficult to assess on account of the wide variety of machines produced.	Mather & Platt's have taken over a large factory at Radcliffe.	About two/three years.	75% export; 25% home use.

APPENDIX III (CHAPTER VI)

B. Prices of Textile Machinery, December, 1945

Type of Machinery	Present Price	Increase over pre-war	Foreign machinery prices
High-draft ring spinning.	£5 per spindle (including preparatory machinery).	65% on average.	Said to be 30% to 50% over present British prices.
Northrop automatic loom (plain-single shuttle).	£160 per 40" reed space (£4 per inch). Electric motor, shuttles, beams, drop-wires, etc., included.	50%	£170/£175 for a Draper (U.S.A.). (N.B.—Present cost of Crompton & Knowles multi-shuttle automatic rayon loom quoted as £450 for 45"—£10 per inch.)
Lancashire type plain loom.	£40 per 40" reed space (£1 per inch). Electric motor £25 extra. No stop motion, healds, reeds, etc.	70/80%	No information. (Germany and Italy were the only competitors pre-war.)
Universal hand coner (44).	£11/£12 per spindle.	70% on average.	—
Holt hand coner.	£10/£11 per spindle.		
Abbott auto. coner.	£17 per spindle.		
Hacoba auto. winder (cone to pirn).	£37 10s. per spindle.		
Abbott auto. pirn winder.	£25 per spindle.		
Universal winder (90)—pirner.	£8 per spindle.		
Various finishing machines.	Cannot be enumerated owing to variety.	75% to 100%	—

APPENDIX IV. (CHAPTER VI)

LABOUR REQUIREMENTS: U.S.A. AND U.K.

Examples from Platt Mission Report

ILLUSTRATION 1. **Spinning: Coarse Yarn**

9's TWIST (250,000 lb. per 48 hours)	American			British								
	High Draft (50,112 spindles)			Mule Low Draft (94,320 spindles)			Ring Low Draft (49,728 spindles)			Ring High Draft (49,728 spindles)		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Card Room	109½	—	109½	59	107	166	55	107	162	50	88	138
Spinning Room	54½	62	116½	185	—	185	24	146	170	24	146	170
Total	164	62	226	244	107	351	79	253	332	74	234	308

ILLUSTRATION 2. **Spinning: Medium Yarn**

31's TWIST (30,000 lb. per 48 hours) 43's WEFT (18,000 lb. per 48 hours)	American			British								
	High Draft (48,676 spindles)			Mule Low Draft (65,780 spindles)			Ring Low Draft (53,328 spindles)			Ring High Draft (53,328 spindles)		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Card Room	43	2	45	15	69	84	15	69	84	14	41	55
Spinning Room	27	31	58	89	—	89	19	92	111	19	92	111
Total	70	33	103	104	69	173	34	161	195	33	133	166

ILLUSTRATION 3.

Winding and Beaming: Coarse Yarn

12's (120,000 lb. per 48 hours)	American Mill Practice	British Mill Practice
	Total	operatives
Spooling and winding	17½	86⅛
Beaming	5½	37½
Total winding and beaming ...	23	124

ILLUSTRATION 4.

Winding and Beaming: Medium Yarn

30's (30,000 lb. per 48 hours)	American Mill Practice	British Mill Practice
Spooling and winding	7½	36⅛
Beaming	2½	16⅛
Total winding and beaming ...	10	53

ILLUSTRATION 5.

Weaving: Coarse Cloth

30 ins. wide. 70 × 44 ends × picks per in. 9's warp count/12's weft count (1,515,000 yards per 48 hours)	American automatic loom	British four loom system
Average number of looms working ...	2,720	6,060
On 48 hours basis	5,440	
Total operatives	858	2,002

ILLUSTRATION 6.

Weaving: Medium Cloth

33 ins. wide. 82 × 58 ends × picks per in. 32's warp count/42's weft count (788,000 yards per 48 hours)	American automatic looms	British six loom system
Number of looms running	1,347	4,148 looms
On 48 hours basis	4,041	
Total operatives	307	930

APPENDIX V (CHAPTER VI)

COMPARATIVE LABOUR REQUIREMENTS: BRITISH AND AMERICAN PRACTICE

In submitting the following note the Shirley Institute says that the figures are useful for giving a general idea of the labour requirements, but that they do not represent closely the situation for any particular mill, and that a few assumptions have had to be made.

Note on the labour consumed in manufacturing two cloths, based on the data provided by the Platt Report

I. The cloths considered are :—

Coarse Cloth. 30" wide. 70×44 ends×picks per inch.
9's warp count/12's weft count.

Medium Cloth. 33½" wide. 82×58 ends×picks per inch.
32's warp count/42's weft count.

II. The labour consumed is expressed as operative hours per 100 lbs. of loom state cloth (O.H.P.). O.H.P. is in direct inverse proportion to P.M.H. It is chosen because it is additive, process to process.

III. Table I shows the figures for each of the cloths, processed according to British Low Draft practice and according to American practice. Table II shows the differences between these practices.

TABLE I

British and American O.H.P. for two cloths

PROCESS	COARSE CLOTH		MEDIUM CLOTH	
	British Low draft	American	British Low draft	American
Blowroom ...	0·48 = 1·8%	0·39 = 3·4%	0·64 = 1·0%	0·56 = 2·4%
Cards	0·69 = 2·7%	0·89 = 7·8%	0·82 = 1·4%	0·83 = 3·6%
Draw Frame ...	0·40 = 1·5%	0·26 = 2·2%	0·73 = 1·2%	0·44 = 1·9%
Slubber	0·49 = 1·9%	0·50 = 4·3%	0·68 = 1·0%	0·73 = 3·2%
Intermediate ...	0·96 = 3·7%*b*	(*a*)	1·54 = 2·6%	(*a*)
Rover	(*a*)	(*a*)	3·77 = 6·3%*b*	1·80 = 7·9%
Ring Frame ...	3·27 = 12·8%	2·24 = 19·3%	10·96 = 18·2%	5·74 = 25·1%
Total Spinning...	6·29 = 24·4%	4·28 = 37·0%	19·14 = 31·7%	10·10 = 44·1%
Winding (*c*) ...	3·46 = 13·4%	0·70 = 6·1%	5·85 = 9·8%	1·20 = 5·2%
Beaming ...	1·02 = 4·0%	0·15 = 1·3%	1·72 = 2·8%	0·26 = 1·2%
Total Winding and Beaming	4·48 = 17·4%	0·85 = 7·4%	7·57 = 12·6%	1·46 = 6·4%
Sizing	0·43 = 1·7%	0·39 = 3·4%	0·53 = 0·8%	0·33 = 1·4%
Looming ...	0·72 = 2·8%	0·41 = 3·6%	1·07 = 1·7%	0·46 = 2·0%
Weaving ...	12·86 = 50·0%	4·68 = 40·5%	30·61 = 51·1%	8·82 = 38·7%
Warehouse ...	0·97 = 3·7%	0·94 = 8·1%	1·25 = 2·1%	1·73 = 7·4%
Total Weaving...	14·98 = 58·2%	6·42 = 55·6%	33·46 = 55·7%	11·34 = 49·5%
Grand Total ...	25·75 = 100·0%	11·55 = 100·0%	60·17 = 100·0%	22·90 = 100·0%

(*a*) Process omitted.

(*b*) For high drafting this process is generally omitted and in addition the O.H.P. at the following ring frame can be reduced by about one-tenth.

(*c*) Includes pirning for the weft.

TABLE II

British minus American O.H.P. (c)

PROCESS	COARSE CLOTH	MEDIUM CLOTH
Blowroom	0·09 = 0·6%	0·08 = 0·2%
Cards	0·20 = −1·3%(b)	−0·01 = 0·0%
Draw Frames	0·14 = 1·0%	0·29 = 0·7%
Slubber	−0·01 = −0·1%(b)	−0·05 = −0·1%(b)
Intermediate	0·96 = 6·8%	1·54 = 4·0%
Rover	(a)	1·97 = 5·2%
Ring Frame	1·03 = 7·3%	5·22 = 14·1%
Total Spinning	2·01 = 14·3%	9·04 = 24·1%
Winding	2·76 = 19·6%	4·65 = 12·5%
Beaming	0·87 = 5·9%	1·46 = 4·0%
Total Winding and Beaming ...	3·63 = 25·5%	6·11 = 16·5%
Sizing	0·04 = 0·3%	0·20 = 0·5%
Looming	0·31 = 2·1%	0·61 = 1·6%
Weaving	8·18 = 57·6%	21·79 = 58·4%
Warehouse	0·03 = 0·2%	−0·48 = −1·1% (b)
Total Weaving	8·56 = 60·2%	22·12 = 59·4%
Grand Total	14·20 = 100·0%	37·27 = 100·0%

(a) Process omitted.

(b) British O.H.P. *less* than American.

(c) The percentages show how the total difference in O.H.P. is distributed among the processes. For example the Blowroom difference of 0·09 for the Coarse Cloth is not 0·6% of either Blowroom O.H.P.; it is 0·6% of 14·20, the total difference in O.H.P.

ANNEXE I. (PART II)

INDUSTRIAL RESEARCH FELLOWSHIPS (RECOMMENDATION XIV)

1. A Foundation to bring the benefits of scientific research to the Textile Industry is not without precedent, but certain features of the proposal now put forward are novel.

2. It is not the object of the Foundation to perform the research function for industry and the motive of the present proposal is to assist research effort in enterprising firms. Its ultimate aim would be to establish a body of experienced research workers within the industry itself, i.e., in the place where their work would be carried out in consonance with the productive and commercial aspects of the textile industry.

3. This objective should normally be attained by the individual efforts of the firms and without external aid. There are, nevertheless, special circumstances in the textile industry which make it difficult to attract the type of scientific men needed. We believe, for instance:—

(1) That there are firms in the industry which have ideas or problems capable of being approached by scientific methods but which have no experience in the direction of research or in the employment of scientifically-trained men.

(2) That scientists whose services could be of benefit to the textile industry are repelled by the hazards of misunderstandings arising from the conditions above mentioned. These men are more likely to be attracted by the conditions prevailing in academic and other institutions and are lost to the textile industry.

4. To further the prosecution of research in these circumstances we visualise a Research Foundation having on its staff research fellows and associates whose services could be made available through the Foundation to firms requiring them. It would also be a function of the Foundation to train as Research Associates selected graduates in science or technology who would receive special training in textile science and technology in approved research institutions. It is envisaged also that supervision of the scientific activities of the Foundation would be undertaken by senior Research Fellows, including Honorary Research Fellows, who would be available for consultation to the applicants for research assistance. We consider that, if the necessary financial support is forthcoming, such a scheme is feasible and it appears to us that the Textile Institute already possesses the necessary powers under Royal Charter to administer the project should it be willing to do so.

ANNEXE II. (PART II)

TEXTILE RESEARCH ADVISORY COUNCIL (RECOMMENDATION XV)

1. In the absence at present of any authoritative organisation representative of the whole of the textile industries, the Textile Research Advisory Council might be appointed by and responsible to H.M. Privy Council.

2. The aims of the Textile Research Advisory Council should be :—

(1) To bring about an increase in the use of scientific methods in the textile industry, and in particular to increase the amount of research done by individual firms.

(2) To foster research in academic and other institutions considered likely to lead in the direction of the development of the textile industry, or to help in the training of men who could be employed in creative capacities in the industry.

(3) To foster the work of any other organisation or group of individuals whose aim was the scientific and technical advancement of the textile industry.

(4) To bring about a general strategy of textile research on a broad basis, leaving tactics to the various research laboratories.

3. The principal functions of the Textile Research Advisory Council would be :—

(1) To follow the course of research and development in every field of textile endeavour in all parts of the world and in all branches of science.

(2) To explore research activities within the British textile industries and in other British institutions which may influence the progress of the textile industry.

(3) To advise on the deployment of the resources of modern science and the available scientific manpower of the country for the benefit of the textile industry.

(4) To advise the industries on the co-ordination and integration of existing researches with regard to (*a*) different fibres, and (*b*) different processes. The extent of duplicated researches should be considered and steps taken to collate published work in the textile field and to encourage exchange of private information.

(5) To suggest measures for fostering research in every phase of textile production. It should encourage work by universities, central research institutes, co-operative groups, and industrial organisations, and indicate the suitability and/or advisability of certain researches being carried on in certain laboratories.

(6) To advise on the allocation of funds available for textile research, the administration of Textile Research Fellowships (if adopted) and the exploitation of inventions from non-profit organisations.

4. The composition of the Textile Research Advisory Council should be limited to men who are capable of fulfilling the above functions, i.e., men who from their own knowledge and active participation in research and technology are capable of appreciating the trends of scientific and technical

advance in the textile industries. The composition of the Textile Research Advisory Council might, therefore, include :—

(1) Representatives of research institutions and central laboratories making a notable contribution to textile science or technology.

(2) Two or three members from the industry noted for their initiative and success in the application of scientific knowledge to the development of textile technology.

(3) Two or three members from the industry noted for their personal achievements as successful research workers, discoverers or inventors.

(4) One or two representatives of pure science, i.e. a chemist or physicist (or both) holding a high position in university life and eminent for research in fields of pure science fundamental for the development of textile technology.

(5) One or two members eminent in the academic world for their activity in branches of applied science and technology having an important bearing on the textile industries, e.g., the chemical and mechanical technology of textile fibres, chemical engineering and mechanical engineering.

Membership of the Council should be so arranged as to include a representative selection of experts in the four main divisions of textile activity; namely (*a*) fibre production and properties, (*b*) spinning, (*c*) fabric production, and (*d*) bleaching, colouring and finishing. Similarly, sub-committees set up to deal with research in each of these four fields should be augmented where necessary by co-opted members so as to ensure adequate representation of the different types of fibre.

APPENDIX TO MEMORANDUM OF DISSENT

RE-EQUIPMENT AND COSTS OF PRODUCTION

1. The range of products is so vast and the conditions so diverse in the cotton industry that any set of costings is open to the objection that it does not give a representative cross section of the industry and of the goods it produces. The comments which follow are based upon the costings provided by the Costs Sub-Committee for six cloths which are in substantial production.

2. One basic assumption which we consider inevitable in the circumstances runs throughout the following tables. It is that if a double day shift is operated with modern machinery the weekly hours of work should be reduced from 48 to 40 without loss of weekly earnings—i.e., that hourly earnings should be increased by 20 per cent. It might, at first sight, appear to be begging the question to make this assumption. But several important facts must be borne in mind. First, that the operatives can legitimately claim that at least a part of the gains from technical improvement should pass to them. Second, that a double day shift in the cotton industry will not be accepted by the trade unions unless there is some *quid pro quo*. The operation of a double day shift in an industry where large numbers of women are employed is much more disturbing to family life and social relations than in an industry such as engineering, where men are largely employed. There is still, in some quarters of the county, suspicion of the double day shift although such a system has been worked for many years with success by a number of firms. Third, that present wage rates are so fixed that workers on modern machinery will earn more per week than workers on the traditional machinery*. It seems hardly likely that the trade unions would be prepared to forego these differentials.†

3. Table I gives estimates of the cost of producing six different cloths, under average working conditions, by five different systems of production. The assumptions regarding capital costs are as follows :—

(*a*) Depreciation has been allowed, *on current replacement values*, at rates which will write off machinery in 20 years when working single shifts, and 15 years when working double shifts.

(*b*) Depreciation has been allowed on buildings, at 1939 values, to allow for replacement in 50 years.

(*c*) Interest has been allowed at 5 per cent. on the full replacement value of fixed equipment and at 5 per cent. on average working capital.

---

* Thus in 1937 full time weekly earnings on the eight looms and automatic looms systems were substantially higher than on the four looms system.

† It should not be overlooked that in most other countries where two or more shifts are worked the hours of work are reduced in the second and third shifts.

TABLE I

Total Costs of Production per Yard of Six Selected Cloths (Cost of 4 Lancashire Looms = 100).

Cloth	4 Lancashire Looms per Operative	8 Lancashire Looms per Operative	8 Lancashire Looms per Operative	Automatic Looms*	Automatic Looms*
	Low Draft	High Draft	High Draft	High Draft	High Draft
	1 Shift	1 Shift	2 Shifts	1 Shift	2 Shifts
1	100	100	100	98	97
2	100	96	94	99	93
3†	100	99	100	97	96
4	100	97	97	98	95
5	100	99	97	104	99
6	100	99‡	99‡	98	94

* The number of automatic looms per operative varied, with the type of cloth from 12 to 20.

† Low draft throughout. ‡ 3 to 4 looms per weaver.

4. The conclusions to be drawn from Table I are as follows:—

(*a*) Different cloths give different comparative results.

(*b*) The margin of advantage is normally with the automatic looms high draft system on two shifts.

(*c*) The advantage of the automatic looms high draft system on two shifts over the traditional system of four Lancashire looms with low draft ranges from 1 per cent. to 7 per cent. of total cost.

(*d*) In comparing the two systems which give high hourly earnings—eight Lancashire looms with two shifts and automatic looms with two shifts—the automatics show no great advantage.

5. The figures in Table I, assuming depreciation on the basis of present-day machinery prices, provide, from the strictly accounting point of view, a fair comparison. From the broader economic point of view they have one serious defect—that whilst the cotton industry, if it is to run the automatic loom system extensively, must purchase the automatic looms new at the present high prices, *it can operate the four-loom or the eight-loom system with machinery it already possesses.* This makes a very important difference in reaching conclusions regarding economic and commercial policy.

6. A business re-equipping completely to-day would hardly be justified in investing capital unless it could foresee the return of the whole of its capital. A business with existing equipment, however, might be acting with full prudence in following quite a different policy. It might already have written down its capital and accumulated liquid resources for the purchase of new machinery. It might, quite properly, consider that present-day prices of textile machinery were excessively high and decide to depreciate on the basis of lower values than those now ruling.* Or, judging that the industry must shrink, it might

* It is sometimes argued that unless the existing firms depreciate on present replacement costs, then the whole industry will one day wake up to find that all its machinery has now reached the end of its useful life and that inadequate resources exist to replace it. This is a misunderstanding. The existing machinery is of very varying age and it would disappear gradually. As it disappeared and the industry became smaller profits would rise. This would immediately encourage the influx of new capital into the industry. We know of no case where, due to ruinous competition, an industry has been reduced in size below the point necessary to meet the existing profitable demand.

follow a policy of running its equipment until worn out and then closing down. In all these cases costs, as shown in Table I, would be too high for firms operating the existing equipment.

7. The right basis of costing can provide the subject of endless controversy since it involves estimates of the future. The three vital considerations are the prime costs (i.e., total costs less capital costs) on the old machinery, the full costs on the new machinery and the extent to which such factors as wages and machinery prices might change in the future. But, merely as illustrations, two further comparisons may be given. Suppose that a firm, operating the traditional four Lancashire loom system, decided that it need make no further allowances for depreciation on its equipment (but allowed 5 per cent. interest on capital at present replacement prices as allowed by the Costs Sub-Committee). Then the comparative costs of the "old" and the "new" systems of producing cloth would be roughly as follows :—

TABLE II

Cost per Yard

Cloth	4 Lancashire Looms Low Draft 1 Shift	Automatic Looms High Draft 2 Shifts
1	100	102
2	100	103
3	100	108
4	100	102
5	100	109
6	100	102

8. If, on the other hand, this firm decided to charge depreciation and interest on 1939 values then the comparison would be approximately as follows :—

TABLE III

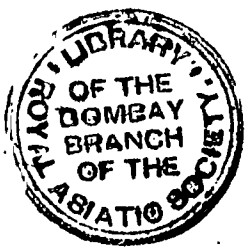
Cost per Yard

Cloth	4 Lancashire Looms Low draft 1 Shift	Automatic Looms High Draft 2 Shifts
1	100	101
2	100	102
3	100	104
4	100	101
5	100	106
6	100	100

9. In both these cases, given merely as illustrations, the traditional method of producing cloth would show lower costs than the modern method and if calculations were made on the same basis for the eight-loom system the cost advantage of using existing equipment would be even greater.

10. From the point of view of the individual firm it would be extremely wasteful if it scrapped its existing equipment immediately a new and cheaper method were introduced. The right policy is to await the time when the new technique shows total costs lower than the prime costs of the older methods.

11. The same argument is broadly true if the case is considered from the national point of view. Thus if it were argued that, because of the present general shortage of man power in the country, there is a case for re-equipment in the cotton industry that argument would only be true if, in fact, the labour required for making cotton goods with existing equipment were greater than the labour required for making the same cotton goods under the new methods plus the labour required to produce the new equipment. The nearest we can get to the making of such a comparison is, in fact, to compare the total costs of the new method with the prime costs of the old method.



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Appendix E.—The Report made to the Working Party by the Delegation which visited North America.

Map showing Distribution of the Hosiery Industry in 1941.

To: The President of the Board of Trade

Sir,

We were constituted as a Working Party in November, 1945, with the following terms of reference :—

> " To examine and enquire into the various schemes and suggestions put forward for improvements of organisation, production and distribution methods and processes in the Hosiery Industry, and to report as to the steps which should be adopted in the national interest to strengthen the industry and render it more stable and more capable of meeting competition in the home and foreign markets."

We have interpreted the term " Hosiery Industry " to include stockings and socks and all knitted goods with the exception of warp knitted fabrics. We have regarded dyeing and finishing, to a large extent, as a separate industry and have therefore concerned ourselves with it only in so far as it affects directly the production and cost of finished hosiery products, making no attempt to investigate its internal efficiency.

In pursuing our investigations and reaching our conclusions we have acted in our individual capacities and in accordance with our personal convictions. At the same time we understand that on many matters dealt with in this report our views are in broad agreement with informed opinion in this industry.

In view of your request for an early report we have not attempted to make an exhaustive survey. In the expert knowledge possessed by many of our members and in the various reports, memoranda, statistical and other information produced by organisations in the industry and by Government Departments, we have had available much of the material needed for our work. We have also sought by means of questionnaires to obtain information about their views, problems and financial and general position from about 120 representative firms in the industry as well as from the hosiery machine builders. In addition we have had the benefit of views and advice from various persons and organisations concerned with research, production, distribution and welfare and personnel matters. Also our Chairman and various of our members have visited hosiery factories, machinery and needle factories and research institutions to obtain a first-hand appreciation of conditions. A delegation of seven members (Mrs. Bird, Mr. Bussens, Mr. Grimmond, Mr. Johnson, Mr. Kempton and Mr. Moulden under the leadership of Mr. Yeabsley) have examined the hosiery and knitwear industry in the United States and Canada and the knowledge and information they have obtained has been of great value. We have included in our report appropriate passages from the report of this delegation which has been printed in full as Appendix E.

We wish to express our thanks to the many people who have helped us in various ways and would mention first the people named in Appendix A who have worked as co-opted members of the Sub-Groups we set up to examine various matters. Their expert assistance has been of great value. We would like to record our appreciation of the help and hospitality we have received from the Scottish Sub-Group which was set up to advise us, through Mr. Grimmond and

Mr. Whipp, of special Scottish problems. The members of this Sub-Group have spent much of their valuable time in considering and commenting on the questions we have discussed.

We are indebted to the Colleges of Art and Technology, Leicester, for the use of their Committee Room, and to the National Hosiery Manufacturers' Federation for the use of their Council Room for our meetings.

We wish to acknowledge the valuable and unfailing assistance we have had from Mr. Coleman, the Hosiery Controller, both as Assessor to the Working Party and on many matters connected with our work; and to thank Mr. Kennewell, the Director of the National Hosiery Manufacturers' Federation, who has attended our meetings as an Observer and has acted as a co-opted member of two Sub-Groups, for the help he has given us in this and other ways.

We desire to express to Mr. Wright, the Secretary of the Working Party, our cordial thanks for his untiring efforts on our behalf and also to Mr. Brown, the Assistant Secretary, and to Miss King for her work with the Scottish Sub-Group.

Finally, we thank both sides of the industry for the co-operation they have given to us throughout.

1. The Form of the Report

WE think it desirable to begin our report with an explanation of the way in which it is made up and we have devoted this chapter mainly to that purpose.

It was quickly realised by those of our members who were not previously aware of the position, that the hosiery industry though it is mainly covered as a whole by manufacturers' and workers' organisations can to a large degree be regarded as a number of separate textile industries each using the knitting process though on different machines and with different types of factory organisations. The industry has its own sectional organisations of manufacturers within the main framework, the sections corresponding to the type of products. The knitting machines used vary considerably. At one end of the range are the very large machines of the most modern type, costing somewhere about £7,000 each and capable of knitting sets of 30 or 32 pieces of shaped fabric per machine each of which pieces is subsequently linked and seamed on other machines to form a fully fashioned stocking. At the other end are the small hand operated "flat-bar" machines costing £50 each or less and used for producing single pieces of shaped or unshaped fabric each of which is subsequently linked and seamed (after cutting if it is unshaped) to form outerwear.

The hosiery industry is an essential and integral part of the general clothing industry of the United Kingdom though it has a separate character of its own and, as a whole and in its various sections, has many unique characteristics. It is for example the sole commercial producer of socks and stockings. The latter is a product which is of outstanding importance to women not only as an article of clothing but also because of the psychological satisfaction of being able to obtain with ease a sufficient supply of stockings of attractive quality which fit and wear well. Most of its other products: outerwear, underwear, bathing costumes, gloves, scarves, fabric, etc., have their counterparts in the products of other textile industries but have their own distinctive characteristics, the main one being the structure and elasticity of the fabric resulting from the knitting process. With the exception of the fabric producing section which supplies knitted fabric to the garment industry the various branches of the hosiery industry differ from other textile industries in that their raw material is yarn and their products are finished garments. In other words the productive sphere covered by hosiery manufacturers corresponds to that covered by the weavers, the merchant converters and the makers-up in the woven garment industry.

The general organisation and problems of a hosiery factory depend not only on the type of garments made, but also in some cases on which of several types of knitting machines are used. This diversity of organisation and problems, which is further complicated by the existence of many firms producing several lines of goods of widely different types, has made our task of examining the industry somewhat complicated. We have found it necessary to examine each of the main branches of the industry separately while keeping constantly in mind the necessity for reporting uniformly on the industry as a whole. We do not claim to have been fully successful in meeting this latter necessity and, as will be apparent from this report, we have been obliged to leave the pursuit of further investigations in some directions for subsequent action.

Following the general survey given in Chapter II of the development of the industry up to and including the changes during the recent war, we have considered separately in Chapter III each of the main branches of the industry and have in each case stated our conclusions and recommendations which apply especially to that branch. In these individual surveys we have found it necessary to deal briefly with the raw materials, buildings, labour and machinery appertaining to each branch. Each of these subjects is dealt with more generally in a subsequent chapter as are the subjects of costings, finance and statistics (Chapter VI), distribution (Chapter IX), personnel management including recruitment, training, welfare and health (Chapter X), research (Chapter XI) and design (Chapter XII).

We have given in Chapter XIV a brief indication of the main general conclusions and recommendations on which we desire to place special emphasis. We have drawn these up as generally as possible to show the trend of our views and for full interpretation recourse must be had to the conclusions and recommendations set out in earlier chapters of this report many of which refer to specific problems not brought out in Chapter XIV.

As our inquiry proceeded we became convinced of the need for a central organisation to consult with and advise the industry and the Government on matters of broad policy. The establishment of this organisation is one of our main recommendations and many of our other recommendations concern matters which such a body is best fitted to perform. We have called this body *the Hosiery and Knitwear Council.* We have set out in Chapter XIII its constitution and general functions as we see them, and have outlined in the text of this report various suggestions which, if accepted, we hope will be referred to it for action.

A word of explanation is necessary about the title " Hosiery and Knitwear Council " which we have suggested. We have found it is a common error outside trade circles to suppose that the hosiery industry is concerned only with stockings and socks, which in fact constitute only about 40% of its output. Ambiguity has resulted from the use of the term " hosiery " in this sense particularly by the retail trade. We cannot suppose that the industry has gained any advantage from this confusion which may possibly have resulted in it receiving less attention than it deserves both in Government circles and elsewhere. We have therefore chosen the title of the Council as suggested to avoid ambiguity and suggest in this connection that attention might be profitably devoted to a revised nomenclature more in keeping with the terms in normal use as is the case in America.

Finally we think it desirable to mention that in making our investigations we have noticed a certain reserve in some quarters which, on inquiry, appeared to be due to apprehensions that the results of our examination might form the basis for a preliminary step towards nationalisation of the industry. In view of the categorical statements made on behalf of the Government we have carried out our work confident that there is no foundation for such apprehension. We would here express our strong opinion that the industry can make its best contribution to the national good under a system of private enterprise operating within the framework of general policies which we have striven to express in this report.

II. A Brief Historical Survey of the Industry

SOME reference to the more distant past is essential to a proper understanding of the influences of age and tradition upon the growth and development of the industry in this country, especially when we draw comparisons between our own organisations and those existing in other countries where the industry is comparatively new. We have, however, in this brief historical review, for the most part concentrated attention upon the trend of events during the present century and in particular upon the expansion and changes which took place during the inter-war periods.

Hosiery, now ranking third amongst our textile trades, produces a remarkably wide range of products which from earliest days have been distinguished from woven materials by the formation of a series of loops in contrast to the interweaving of warp and weft threads. The introduction of hand knitting into this country in the 15th century marks the beginning of the British hosiery trade; in the following century the art of knitting by hand spread throughout the country and was taken up extensively in Scotland. In many places it survived as a handwrought industry after the stocking frame was introduced, and even to-day, setting aside all private uses, it survives in parts of Scotland and Ireland on an organised commercial basis. In 1589 William Lee, a country parson, without previous mechanical experience or training, invented the art of framework knitting and to his genius the modern hosiery trade owes its foundation.

The technical details of his invention established the principles upon which machine-made stockings were to be produced for the next two hundred years. Some years later Lee succeeded in producing a frame with twenty needles to the inch upon which silk stockings could be made. Discountenanced by his own country he took himself, his brother, nine workmen and as many frames to Rouen. Without friends, and suspect on account of his religious convictions, the inventor of the stocking frame fell into poverty and distress and died in Paris in 1610 leaving his brother James to bring back all the frames except one; these he set up in London as the first centre of hosiery manufacture, shortly afterwards returning to Nottinghamshire to establish framework knitting in the Midlands.

Perhaps in a somewhat different and less fortunate manner history has repeated itself. Two and a half centuries later, in 1869, a patent was granted to William Cotton, a native of Leicestershire, for a machine which has become known wherever hosiery is made as Cottons Patent; this provided the solution to what had long been considered an insuperable difficulty, the automatic increase or decrease in the number of stitches in the knitting courses required to produce a fashioned garment on a power driven machine. It has been left to other countries to grasp the opportunity provided by the genius of an Englishman, who, for all time, dispelled the traditional belief that "you may as reasonably expect to weave a coat by steam as to weave a stocking"; it has been left to Germany and the United States to establish predominance in the construction of the intricate modern fully fashioned stocking machine, adapting the invention of William Cotton to the entire exclusion of the British hosiery machine builder. The curtailment of these sources of supply at a critical time in the further expansion

of the industry, has created difficulties for the British manufacturer and the British public which are fully examined in this report.

During the sixteenth and seventeenth centuries machinery was viewed with suspicion and public opinion was in sympathy with those who objected to the introduction of any engine which by doing work better or cheaper, lessened the opportunity of the handicraftsman to earn a living; framework knitting shared in the general discouragement to industrial progress and found its main outlet in the production of goods of the highest quality. Mr. Wells, in his valuable book *The British Hosiery Trade; Its History and Organisation*, writes:

> "In this early period interest centres in the rise and decline of the Framework Knitters Company illustrating as it does the evolution of capitalist control and the changing attitude of Parliament towards the regulation of industry. It provides also an important example of the emergence of trade unionism out of the chartered corporation of small masters; for the Framework Knitters played a notable part in the early history of the trade union movement."

In contrast the first half of the eighteenth century was a period of rapid development. Encouragement was given to the export trade by improvements in manufacturing methods, especially of woollen goods, and the export of knitting frames was prohibited under heavy penalties. This attempt to create a monopoly was only temporary, and later in the century so great was the distress caused by foreign competition that the import of silk stockings was prohibited. Still, broadly speaking, the industry was expanded by the people of the region in which it was originally established; the surplus population turned from agriculture in the hope that growing industry would provide a more generous livelihood. Once that road was taken there was no turning back and there followed a period, which lasted long after the early years of the Industrial Revolution, of fluctuating activity and unregulated domestic production attended by social evils which were even worse than those to be found in the newly established factories. It became proverbial to be as poor as a stockinger who counted as his only blessing that he had no factory bell and that each man was at liberty to earn what he liked, how he liked, and when he liked.

Mr. Wells in stressing the importance of the industry, the element of romance in its origin, and its many changes of fortune in the last three centuries comes to the conclusion that the subject has many points of interest to the economic historian. Perhaps the most striking is the remarkably long survival of the domestic or cottage system which it exhibits. Even as late as 1870 the great majority of hosiery workers clung to their squalid homes or small workshops, and although by that time the passing of the old system was inevitable it was still many years before the transition to factory production was completed. Here then we have a trade which has passed through an industrial revolution almost within living memory, and in an environment different from that in other textile trades. Too often we tend to assume that in this country domestic industry was practically extinguished in the first half of the nineteenth century, so that instances of its survival need emphasis and explanation. It would seem that in discussing methods of production we are apt to give undue weight to the purely technical factors—inventions in machinery and improvements in processes—whereas these form only one group of conditions and can only operate effectively when other influences are present or when certain obstacles have been removed. Industrial changes appear to result from a combination of factors and so long as any element is wanting progress must be slowed down.

This is so clearly illustrated in the story of the hosiery trade that it is substantially to an examination of those circumstances and elements which appear to us to have a possible retarding influence on continued progress that we have addressed ourselves as a Working Party. Our purpose has been to provide information arising from the evidence we have obtained and to make recommendations which we hope may be of general and lasting benefit in the future. So far are we from being desirous of appearing as critics of the past that we feel compelled in all fairness, to give some account within the space at our disposal of the more important trends during this century and more particularly, the widespread growth during the inter-war years of an industry which is remarkable for the variety of its plant and the range of its products.

The transfer from domestic to factory production tended to consolidate and centralise the hosiery trade in the East Midlands to be closely followed by the growth of dependent industries. Similar centres on a smaller scale were consolidated in Scotland round Hawick in the East and Glasgow and Ayrshire in the West. These traditional centres continued to exercise a steady pull well into the early years of this century. In an industry in which the number of large firms has always been relatively small the enterprising and ambitious employee found little opportunity for advancement; access to the industry by a man of small or moderate means has always been remarkably easy and new entrants, their prospect of success based on the proved success of their employers and knowing the facilities and advantages of their own district, settled down one after the other as neighbours and competitors of their former masters. The advantages that people following the same skilled trade derive from near neighbourhood to one another have been a significant factor in raising the knitting industry in this country to its present level. While the localisation of the industry in the East Midlands and Scotland remains unchanged, its distribution into other areas in recent years has been notable. The development in the Greater London area has been influenced by the goodwill of the London market; proximity to yarn spinners and a supply of suitable and cheaper labour resulting from the depression in the cotton industry favoured the expansion in Lancashire; Leek and Macclesfield became important centres with the growing demand for silk and rayon goods; even seaside towns have found the manufacture of knitwear a profitable alternative to part-time employment.

It would appear, therefore, that pent-up resources of experience and energy existed ready to take advantage of the scientific, technical and social changes which were the outcome of the 1914-1918 war. The year 1914 saw the beginning of a new era; steam ceased to be the main source of driving power and railways the main source of transport, changes of which the lighter industries were quick to take advantage; shorter hours, better working conditions and rising incomes were immediately reflected in a growing expenditure on clothes and a marked advance in the standard of national dress of adults and children alike. The output of hosiery was increasing rapidly before 1914, being valued at £8,726,000 in 1907 and £12,048,000 in 1912, and according to the Census of Production of goods produced in 1930 the value was £39,818,000. To-day with restricted supplies of raw materials and labour, the turnover is nearly £70 million, a remarkable expansion even when allowing for price changes. A more satisfactory basis of measurement is the output of goods in dozens and the number of insured persons employed. In the fifteen years before the recent war, the number of persons employed rose from less than 100,000 to more than 133,000.

During the same period the labour force in the cotton industry declined from over 525,000 to less than 375,000 and in the woollen and worsted industry from 275,000 to 240,000.

The following table illustrates the general trend of output :—

TABLE 1

OUTPUT OF PRINCIPAL PRODUCTS IN QUANTITIES 1924-1945

(*Source* :—Census of Production, Import Duties Act Inquiry 1937 and Hosiery Control, Board of Trade.)

PRODUCT	1924	1930	1933	1935	1937	1945
Stockings and Socks (Th. doz. pairs) ...	25,400	24,029	29,358	31,176	35,981	19,164
Underwear (Th. doz.) ...	6,514	8,509	11,398	11,627	12,789	7,096

Incomplete as the Census undoubtedly was, it shows that the quantitative production of stockings and socks increased by nearly one half and that of underwear almost doubled between 1924 and 1937. No reliable figures are available for knitted outerwear; expansion in this section has been at least as great as that in underwear; not only have jumpers, pullovers and cardigans supplemented blouses as an essential feature of our national attire, but knitted fabric or jersey cloth is now used in vast quantities by hosiery manufacturers and makers-up for the production of women's suits and dresses.

The increase in the number of establishments and persons employed between 1930 and 1935 is shown in Table 2 :—

TABLE 2

NUMBER AND SIZE OF HOSIERY FIRMS IN 1930 AND 1935

(*Source* :—Census of Production.)

AVERAGE NUMBERS EMPLOYED	NO. OF ESTABLISHMENTS		NO. OF PERSONS EMPLOYED	
	1930	1935	1930	1935
11-24	180	181	3,186	3,088
25-49	196	242	7,006	8,486
50-99	189	216	13,428	15,561
100-199	126	162	17,877	22,346
200-299	40	50	9,461	12,136
300-399	21	30	7,291	10,603
400-499	10	20	4,566	8,933
500-749	21	23	12,412	13,941
750-999	9	9	8,303	7,618
1,000 and over ...	12	6	21,880	12,561
	804	939	105,410	115,273

The overall growth, the rate of which was not uniform throughout the country, is shown in Table 3 :—

TABLE 3

ESTIMATED NUMBERS OF PERSONS AGED 16-64 INSURED AGAINST UNEMPLOYMENT IN GREAT BRITAIN AT JULY CLASSIFIED AS BELONGING TO THE HOSIERY INDUSTRY

(*Source* :—Ministry of Labour.)

YEAR	MALES	FEMALES	TOTAL
1924	19,440	72,200	91,640
1927	21,300	77,670	98,970
1930	23,440	84,030	107,470
1933	25,130	88,370	113,500
1935	25,930 (1,790)	89,040 (11,760)	114,970 (13,550)
1937	27,030 (2,050)	92,380 (11,890)	119,410 (13,940)
1939	27,700 (1,790)	92,570 (11,270)	120,270 (13,060)
1945	11,170 (1,110)	42,280 (5,520)	53,450 (6,630)

The figures in parentheses denote insured boys and girls aged 14-15.

Comparative rates of growth are shown in Table 4 taken from evidence given by the Ministry of Labour to the Barlow Commission :—

TABLE 4

NUMBER OF INSURED PERSONS AGED 16-64 EMPLOYED IN THE HOSIERY INDUSTRY IN JULY 1923 AND JULY 1937

	JULY 1923	JULY 1937
Lancashire	2,010	6,800
Nottingham Exchange Area	8,020	12,220
Leicester	25,450	30,950

What then is the explanation of the steady and continued growth of the knitting industries which is in such marked contrast to the experience of other textile trades? Without any spectacular innovations considerable improvements in manufacturing technique have been introduced; garments, especially underwear, have been simplified, reducing the labour required to make them, and have been reduced in weight where rayon and cotton have largely been substituted for wool; the interlock patent expired in 1929 and this process has been widely adopted for the production of cotton underwear giving durability and comfort in wear. These changes together with increased output have operated with cumulative effect to lower prices. Great as has been the contribution of the knitted outerwear and fine gauge stocking sections, the demand for hosiery of a more general type has responded to a fall in its price and a rise in consumers' incomes. Patching and darning have given way to replacements; the growing use of laundries means larger wardrobes, children's clothes are bought ready made and not put together from cast off garments, the wearing of shorter skirts and the universal adoption of coloured stockings has made for greater variety and increased consumption. If the hosiery trade has been fortunate in some ways, possibly at the expense of weaving, blouse making and other light clothing industries, the impact of war in 1939 probably involved greater set-backs to an industry whose steady progress year by year was a guarantee of continued growth, than to industries which were losing ground.

1939-1945—IMPACT OF WAR

Concentration : Partly on account of the dispersal of war-time production into the North and East Midlands and the consequent demand for man-power, and partly because the self-contained character of its factories made the industry particularly suitable for the purpose, the policy of concentration was in the first instance applied to hosiery and knitwear. In dealing with such a complex industry the Government had neither the time nor the wish to bring individual firms into nucleus groups under a uniform or standard arrangement; manufacturers were encouraged to submit their own proposals to the Board of Trade, a method which offered the best prospects of agreeable working conditions for all parties. The object of the scheme was to maintain output for the services and, for the rest, to restrict the volume and character of production to the minimum commensurate with the needs of the civilian population, to release all available labour, and to ensure to everyone the retention of their identity both as manufacturer and distributor if they so desired. The primary purpose of concentration was, therefore, not to reduce production costs to a minimum by a careful selection of firms and the merging of like with like, or to furnish evidence that small units could not be operated as economically and as efficiently as larger ones. In any case we are inclined to the opposite view and are satisfied that the general structure upon which the industry has been built up and upon which

it now stands is not in itself an obstacle to steady improvement and progress in the future. At the same time it would be unfortunate if during and after the process of deconcentration the policy and outlook of all engaged in the production and distribution of hosiery have not undergone a change for the better as a result of their war-time experience.

We are satisfied that in general the hosiery trade has acquired rather than lost strength during these war-time years ; relationships between managements and workpeople have been maintained on a high and cordial level ; trade organisations on both sides have added to their sense of collective responsibility which has found expression in their contribution to the national effort. As a result of concentration and the demands for military service, the labour force fell to 53,000 in 1944, well below half the pre-war total ; approximately 50% of the factory space was requisitioned and 50% of the available plant closed down, though the retention of staff adequate to keep the remainder in fair running condition was permitted.

Setting aside the requirements of the services, for which full provision was made, activity was directed to the production of those types of clothing for which woven materials were unsuitable such as stockings and socks and underwear with special emphasis on the needs of children ; this policy created a severe but unavoidable setback to the makers of knitted outerwear and beachwear, from which recovery may be slow owing to the loss of skilled workers and experienced designers. We are, however, unable to point to any difficulty arising out of war-time conditions so serious as to make it impossible for any branch of the industry to take advantage within a reasonable space of time of the trading prospects which lie ahead, with the exception of the fully fashioned fine gauge stocking section to which special reference is made in this introduction and elsewhere.

Apart from the re-disposition of labour the changeover to peace-time production is proceeding smoothly ; terminal losses are negligible and financial resources, taken on the average, have increased in spite of the heavy taxation levied since 1939. We deal with this question more fully in Chapter VI.

Government Contracts : Without closely examining the volume and character of the demands made upon the industry for war-time equipment or the methods by which prices, quality and so on were controlled, we are deeply impressed from the information we have acquired by the part that machine knitted garments supplemented by the voluntary efforts of women in their homes, have played in furthering the well-being of our forces under every condition of warfare. Arising from our enquiries there are two important points to which we desire to draw the attention of the Government Departments concerned.

There is little scope for variation in the weight or size of the product of a knitting machine ; cylinder dimensions and gauge, or the number of needles per inch, are strictly limiting factors. The need for modernisation and the replacement of out-of-date buildings and plant which we stress throughout this report may result in the gradual disappearance of certain types of machinery, the value of which can best be appreciated by those responsible for service equipment. Much of the plant was accumulated in the 1914-1918 war when the British hosiery industry had to provide for other armies in addition to our own, and was again put into continuous commission at the outbreak of the Second World War. It is true that machines of a more modern and efficient

type can be built to produce these heavy-weight garments, but without an assurance of their being fully employed manufacturers would be justified in directing their finances to the purchase of plant more in line with the modern trend towards finer gauges and lighter garments. The responsibility for assessing the national and strategic value of this plant in war-time and for regulating its disposal appears to us to rest with the Service Departments and on that account we draw their attention to the matter.

The second point is this: for obvious reasons Government purchase by tender had to make way for some other system at the outbreak of war; the general practice has been to finalise prices on a "cost plus" basis after the ascertainment of actual cost, the amount to be added for profit having been a matter of previous negotiation and agreement. The right to purchase by tender is not open to argument but in the past, unsupported by any evidence of cost, it has led to acute depression of prices, and we recommend to the Government that should they return to the tender system, the prices ultimately accepted should not be lower than are necessary to cover reasonable costs and profits.

BRITISH STOCKINGS

Few things occupy a more prominent place in our national life at the present time than stockings, and certainly none in the knitting industry. In the interests of the public and of the British stocking manufacturer we have decided to devote some space in this introduction to our report to a brief examination, firstly of the extent to which stocking manufacturers took advantage of the measure of protection which was afforded to them for some seven years before the war against subsidies and lower standards of life prevailing in other countries, secondly of the causes which led to criticism of war-time stockings and the acute scarcity which still persists of fully fashioned stockings, and lastly, of the prospects of this scarcity being brought to an end.

Imports of less expensive or seamless type of stockings had become non-existent before the war; domestic output with ample reserve capacity to meet any increase in demand was approximately one million pairs a day on the basis of five working days a week, three out of four pairs containing rayon. The public did not ask that inexpensive rayon stockings should have a long life; repairs were not contemplated; by converting old machines to fine gauges or by introducing new ones the British manufacturer kept pace with a demand for progressively finer stockings which left no heart-burning if they had to be jettisoned after a few days of wear. This demand for stockings, sheer almost to the point of invisibility, has become more general; but for the war we have every reason to believe that the plant necessary to keep pace with it would have been installed; the leeway has now to be made good.

The more expensive fully fashioned stockings have become a treasured possession. In 1930 women in this country on the average each bought one and half pairs of fully fashioned stockings every year and of these 85% were imported; by 1939 the average had risen above three times this figure and home production had also risen to provide for about half of the increased home consumption; the number of persons employed in this section rose from two thousand in 1930 to over ten thousand in 1939, an outstanding and, as events have proved, a most fortunate expansion of textile activity. War, naturally enough, brought a complete cessation of imports, which have not been resumed, and the necessary withdrawal of highly skilled labour for more vital employment reduced the home production by half. The available supply was thus

reduced to about one quarter of its pre-war level; the potential demand owing to higher earnings and an increased capacity to pay for more expensive stockings has risen far beyond the pre-war level. It is reasonable to arrive at a conclusion that the women of this country on the average might at no very distant date require six pairs each of fully fashioned stockings year by year, and that imports will not be resumed on the pre-war scale, and if we take both these possibilities into account, and translate them into terms of employment and industrial activity, then to meet the demand, the rate of expansion of the fully fashioned stocking industry during the next few years must considerably exceed the high rate of expansion which took place in the seven or eight years preceding the war.

It would be unfortunate if any conclusions were drawn from this report which might lead the public into undue optimism that the supply of these better quality stockings is likely to show a marked upward trend in the near future; difficulties still remain to be overcome before even pre-war output can be attained, and whatever hopes may rest on newly discovered fibres such as nylon, their development is a slow and costly process.

Again we have no reason to doubt that, but for the war, the number of fine gauge fully fashioned stocking machines in this country would have been far in excess of the 1939 figure, probably nearer two thousand than the one thousand now in operation. We appreciate the immense difficulties which confront the industry in expanding under present day conditions this fertile industrial field in which previous development was entirely dependent on capital equipment manufactured abroad. We are fully aware of the arguments which have been advanced by hosiery manufacturers and machine builders whenever the construction of these intricate machines in this country has been discussed, all of them coloured by a spirit of caution and a demand for some form of guarantee which would protect the interests of the man who built the machine and the man who paid for and used it. This attitude of caution we well understand, but that these considerations and present day circumstances would arise sooner or later must have been obvious for a very long time, and we are left with the impression that in a matter of such national interest discussions have not taken place on a sufficiently high level and that until recently there has been little or no attempt to formulate a clearly defined policy based on the collective responsibility and initiative of everyone concerned, that is the Government, the manufacturers of fully fashioned stockings and the machine builders. It should not in our opinion be impossible to examine the problem more from the point of view of a united effort towards further expansion and less from the point of view of the individual.

To adopt any or all of the alternatives, that is to say to import machines financed from our own resources, or to import machines financed by foreign interests, or to import fully fashioned stockings on an extensive scale, would be to abandon an opportunity that is unlikely to occur again; at the same time we realise that there is a limit beyond which the fulfilment of the hopes of the public cannot and should not be deferred.

III. An Examination of Production

THIS chapter is divided into seven parts as follows :—

A. Footwear (Stockings and Socks) in three sections :
   (i) Women's Seamless Stockings.
   (ii) Women's Fully Fashioned Stockings.
   (iii) Footwear other than Women's Stockings.
B. Production on Flat Bar machines.
C. Production on Cottons Patent machines.
D. Production on Circular machines (other than Footwear).
E. Knitted Gloves (excluding gloves made from warp knitted fabric).
F. Dyeing and Finishing.
G. General Production Matters.

Investigations into the first five parts of the industry have been conducted under six headings and are reported on in this chapter in the same way.

The headings are :—

(1) Consumption targets.
(2) Raw materials.
(3) Buildings.
(4) Labour.
(5) Machinery.
(6) Production questions (including making-up).

A. FOOTWEAR (STOCKINGS AND SOCKS)

Investigation into the footwear section of the industry has been broken down into three groups :

(i) Women's Seamless Stockings.
(ii) Women's Fully Fashioned Stockings.
(iii) Footwear other than Women's Stockings.

We found it difficult to consider these three groups independently as many of the points raised and problems discussed are common to more than one group. Almost one half of the approximately 400 firms making products in any one of the groups make other hosiery products also, and problems arising in one group of products must often be considered in relation to the total output. The following three tables show the relationship between output, exports and imports of the various main products of the industry.

TABLE 5

OUTPUT BY VALUE

(*Source* :—Census of Production and Import Duties Act Inquiry 1937.)

PRODUCT	1924*		1930		1933		1935		1937	
	£'000	%	£'000	%	£'000	%	£'000	%	£'000	%
Stockings and Socks	19,867	45	17,032	43	16,142	41	16,066	38	18,370	40
Underwear ...	10,824	24	11,084	28	10,881	28	10,743	25	11,682	25
Outerwear ...	11,046	25	9,751	24	9,436	24	9,721	23	10,027	22
Other products ...	2,659	6	1,951	5	2,757	7	5,968	14	5,994	13
	44,396	100	39,818	100	39,216	100	42,498	100	46,073	100

*Great Britain only.

It will be seen that in terms of value this section before the war reached a turnover of 40% of the entire output of the industry, and for some years had represented the largest individual section.

TABLE 6

EXPORTS BY VALUE

(*Source* :—Annual Statement of the Trade of the United Kingdom.)

CLASS OF GOODS	1924	1930	1933	1934	1935	1937	1938
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Stockings and Socks— Cotton, Wool, Silk, Rayon	4,737	2,718	1,322	1,210	1,037	1,258	1,045
Underwear— Cotton, Wool, other Textile materials ...	1,263	623	546	614	593	773	627
Outerwear and Fancy Hosiery— Cotton, Wool, other Textile materials ...	1,436	1,230	772	780	783	1,132	956

Again, it will be seen that (largely on account of the wool stockings and socks contribution) the footwear section heads the list of hosiery exports in terms of value.

TABLE 7

RETAINED IMPORTS BY VALUE

(*Source* :—Annual Statement of the Trade of the United Kingdom.)

	1924	1930	1933	1934	1935	1937	1938
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Stockings and Socks— Cotton, Wool, Silk, Rayon	2,050	3,495	1,126	1,087	1,163	1,849	2,047
Underwear— Cotton, Wool, other Textile materials ...	1,597	1,442	193	231	173	149	112
Outerwear and Fancy Hosiery (including knitted gloves)— Cotton, Wool, other Textile materials ...	1,005	1,017	307	239	270	508	392

In order to get a true picture of the total consumption in Great Britain prior to the war, it is also necessary to consider the import position. Table 7 above shows that in 1937 imports in this section were very high in relation to total imports of hosiery goods, and in fact greatly exceeded exports in the same section. About 70% of all imports in the section were of women's rayon stockings, while in 1937 and 1938 wool footwear accounted for over 70% of the total footwear exports.

(i) WOMEN'S SEAMLESS STOCKINGS

Consumption target :

TABLE 8

YEAR	PRODUCTION (Million dozen pairs)	% OF 1938
1938	18.0	100
1945	8.2	45
Possible consumption target (per year in 5 years' time)	22.0	122

We have given considerable thought to the level of consumption likely to be achieved in about 5 years' time, and numerous factors, such as the influence of fully fashioned stockings, the standard of living, imports, and the introduction of nylon as a material, have all been considered in the setting of the target shown above. This target has been used in considering other matters and it is important to note that it represents a *consumption* target to which production facilities will need to be geared, and is not based purely on the facilities available.

Raw Materials : We have not investigated in detail the problem of raw material supplies in order to meet this target, although it is realised that today material shortages represent a serious handicap to increased production. We assume that suitable expansion will take place in raw material supplies to match requirements over the next five years, particularly if targets are available. A point worth special mention here is the question of high twist rayon yarn which is widely used in the U.S.A. In this country pre-war no more than 15% of rayon yarn consumption for seamless stockings was of this type, the low twist type supplied by the rayon producers being mainly used. In the U.S.A. the proportions were almost reversed and if, as is likely, there is a change-over in this country to high twist yarns an increase in twisting capacity will be needed.

Our inquiries have dealt mainly with the possibility of ensuring better quality products through better and more consistent materials. Generally it can be said that *quantity* of materials was not a pre-war problem for the knitters, but improvement would seem possible in quality particularly in the production of types suitable for specific purposes. Research is needed on this aspect and it is suggested that too little collaboration has taken place between spinners, throwsters and knitters (and possibly dyers) on problems of mutual interest. Bearing in mind the common usage of relatively few types of raw material by many knitters, we consider that the Hosiery Research Institute referred to in Chapter XI should collaborate in the work of the yarn research establishments in respect of hosiery yarns. It is also suggested that the Research Institute might assist with the determination of national quality standards in such yarns. Research is discussed more fully in Chapter XI but we wish to stress here that in view of the special problems and the importance of women's stockings, a section of the proposed Hosiery Research Institute should specialise on this work.

Buildings : The large housing programme of the Government will for some time affect seriously the ability of the building industry to supply new or modified factory buildings. From the point of view of the seamless stocking section, as far as it can be segregated from other production, little new building work will be necessary to achieve the added production required to meet the consumption target. We exclude here the necessity for building or rebuilding to provide amenities such as canteens and cloakrooms, as these matters are

dealt with elsewhere in our report. It is however strongly suggested that, should any manufacturer of seamless stockings embark on a building programme, he should erect buildings suitable for the alternative installation of *fully fashioned stocking machines.* (The special building requirements of these machines will be discussed under Women's Fully Fashioned Stockings.) It should be noted in connection with seamless stockings however that while in view of the adequacy of present factory floor space a substantial rebuilding programme may not be necessary, the efficiency of this section would be generally higher if it were possible to house the machines in buildings better adapted to permit an easier flow of production from the introduction of the yarn to the packing of the finished stocking. The following quotation from the Delegation which visited the U.S.A. on behalf of the British Stocking Industry is of interest:—

> " One-storey, or in some cases, two-storey, buildings were favoured, large rooms with no obstructions (in one case 500 feet long and 125 wide) helped in the unfettered lay-out of plant in the most efficient way. The latter was considered to be very important, new ideas and developments could best be catered for by having freedom to re-plan equipment and lay-out. A factory having a number of small rooms did not permit such freedom."

Labour : We do not propose discussing here the influence that continued full employment will have on availability of labour, as this obviously affects all sections of all industries. In the seamless stocking trade shift work (2-shift and 3-shift) has been common, but doubts are expressed on the possibility of getting people to work on shifts (particularly the night shift) when work is plentiful. It is thought, however, that the necessary production will be achieved to meet the target figure by working substantially a two dayshift system. Re-equipment with up-to-date knitting machines will take some time (*see* Chapter V) and it is most important that meanwhile maximum hours within existing agreements are worked on those available in the interests of the consumer. The effect would be increased production and reduced selling prices (*see* Chapter VI). Finally, shift work is generally confined to and required on the main knitting machines only, staffed principally by male labour. Ancillary processes, employing the greatest number of workers (mainly women) do not generally use such expensive or scarce machinery, and there is little virtue in shift work for its own sake.

The approximate nett additional number of all grades of workers necessary to raise the output of seamless stockings from 1938 figures to the assumed five years' target is between 4,000 and 5,000 and progressive members of the industry are convinced that there is great need for intensified training of all grades. Figures such as up to 18 months for linkers to attain reasonable production are quoted, and on such a basis the need seems well proved. A few firms are giving specialised attention to training of operatives, but there is considerable room for improvement. This general question is considered in greater detail in Chapter X.

Much has been said of the traditional reluctance of hosiery operatives (particularly women) to perform other work, even in the same workroom. We feel that, although there are obviously good reasons at times for this outlook, it is carried too far to be conducive to overall efficiency. The introduction of modern training methods will no doubt shorten the training required for individual jobs, and in the interests of continued stabilised employment in any one firm, we feel that a little greater tendency towards reasonable flexibility would be helpful. We do agree, however, that in the stocking section there is greater possibility of balancing specific activities within the factory than in other sections of the hosiery industry.

Bound up with the question of flexibility is the question of piecework standards, and while this is to a certain extent outside our terms of reference we feel that in the interests of efficiency we should draw attention to an apparent need for a more scientific " rate for the job " classification. At present the amount of skill in the various jobs does not seem to be fairly reflected in the relative earning capacity of those jobs, and we recommend a study of the modern technique of Job Rating by employers and trade unions.

Machinery : The problem of knitting machine availability to meet target requirements can be divided roughly into two sections :

(*a*) Modernising existing plant.

(*b*) Producing new machines.

Dealing with (*a*), much of the existing machinery is aged, and with a tendency towards finer gauge stockings, most machines coarser than 300 needles are obsolete, though a proportion of machines in this category can be rebuilt to meet immediate needs. The machinery position is as follows :—

280 needles and coarser...	...	10,000 machines
300-330 needles ...	...	10,500 machines
340 needles and finer ...	...	3,500 machines

Thus 41% of existing seamless stocking knitting machines are obsolete in their present form.

Of the 14,000 machines of 300 needles and finer, only 3,000 are auto-welt, and therefore partly embody the latest practice. In this connection it should be noted that automatic welt machines predominate in the U.S.A. industry. Generally, therefore, it can be said that the machine efficiency of the seamless stocking section is much below that which is desirable *and is perhaps the principal problem to be tackled by its members.*

Many existing machines have been rebuilt either by the users or by outside machine builders over the years, and there is likely to be considerable demand on those engineering firms wishing to specialise on this reconditioning work. There are, however, serious efficiency limitations to continuous reconditioning of the basic machine.

Dealing with (*b*), the production of new up-to-date machines is being concentrated on by a few British machine builders. In one important case an appropriate U.S.A. machine is being built under licence and for initial production a licence up to the value of £50,000 has been issued for the importation of certain *parts* from America for building here into complete machines. A considerable demand exists for new machines, and the industry anticipates a requirement of rather over 3,000 machines over the next two years of which less than 45% have been ordered. It is doubtful (*see* Chapter V) whether even these estimated requirements can be met quickly enough on the present basis of machine production. This demand, while it is substantial, is small in relation to the amount of machinery needed for re-equipment if our estimated consumption target is to be realised. One estimate puts the replacement figure at 14,000 machines, but even taking half this figure as a conservative estimate, bearing in mind the change in demand for finer gauges, the industry's estimate of 3,000 seems unduly conservative. It must be recognised that unless established firms in the industry undertake re-equipment on a scale adequate to cope with demands, particularly for export, it will be logical for the Government to assist the entry of new firms who will fill the gap.

We have commented in Chapter V on the great need for modern ancillary machines, and any programme of knitting machine modernisation must not overlook these parallel requirements.

Production Questions: Much discussion and investigation has taken place on the question of the optimum size of a production unit. In the seamless stocking trade the following approximate situation is revealed :—

35	manufacturers	with	less than	50	knitting	machines
28	„	„	between	50 and 100	knitting	machines
49	„	„	„	101 and 250	„	„
12	„	„	„	251 and 500	„	„
6	„	„	„	501 and 1,000	„	„
2	„	„	more than	1,000	„	„

As in most industries, productive efficiency tends to fall after the size of the company grows beyond the stage where most activities are within the direct control of the owner or manager. At a certain further stage of growth, more appropriate organisation is introduced and efficiency may rise possibly to a new high level. We have been unable to ascertain clearly what significant difference in efficiency (if any) exists between firms from the point of view of size alone, though it is difficult to see how small units can enjoy all the advantages available to the large organisation. Experience has shown, however, that today's small unit may, under good management, become tomorrow's larger unit. One feature of the industry has been the comparative ease with which an individual may start up on his own with a few machines, and as some of these men have developed highly efficient larger units new firms should not be discouraged.

In the seamless stocking trade the general practice of production is to allocate up to 12 machines per worker. In the U.S.A. the practice is to arrange up to 25 machines under a less skilled machine minder with up to 50 machines superintended by a knitter-mechanic. This latter individual is generally able to devote more specialised attention to quality of production through his more highly developed training and the engineering facilities at his disposal for adjustment and upkeep. We draw the attention of the hosiery industry in this country to the necessity for an examination of this U.S.A. practice.

Quality control in its general, rather than statistical sense, is thought capable of considerable improvement. Many knitters work too much by guesswork rather than by properly laid out specifications, drawings and schedules. We recommend that modern inspection methods are studied with a view to achieving greater consistency of quality and greater continuity of production. It is not always realised that lack of continuity of production invariably produces lack of quality, because " seconds " or poor quality goods are usually produced during stop-start periods.

Dyeing and finishing, because it is an operation " in the production flow " deserves a few words here. We discuss this activity in more detail elsewhere, but it is felt that a high percentage of total production cost is absorbed by dyeing and finishing which, for about three-quarters of the output of women's stockings, is performed by specialists in separate factories. Also we understand that, owing to the policy of buyers generally, British finishing practice differs considerably from practice in the U.S.A. where all stockings are boarded on semi-automatic machines. Apparently the necessary automatic machinery is only obtainable from the U.S.A. and we recommend that imports be permitted.

Finally, there does appear to be a real opportunity for the introduction into factories of a few people trained in modern production techniques, such as Production Planning, and Time and Motion Study. In view of the comparable nature of the products of the group, it might be considered worth while for the National Hosiery Manufacturers' Federation or other body able to act on behalf of the industry to engage the services of a few such specialists to act in an advisory capacity to its members, along similar lines to the recently appointed Board of Trade Production Efficiency Service.

CONCLUSIONS AND RECOMMENDATIONS—PART A (i)

(*a*) We expect that the trend in seamless stocking demand will be towards the finer gauges, and provided that the industry is prepared to instal modern machinery to cater for this trend, and to explore the possibilities of nylon, we regard an expansion of 20% to 25% (by volume) over the 1938 level of production as attainable.

(*b*) Insufficient attention was given pre-war to the yarn used by this section, and we regard a greater degree of collaboration with yarn producers as well as research work both on yarn and stocking production as desirable (see also Chapters IV and XI).

(*c*) An increase of rayon twisting capacity is likely to be needed to provide for the usage of an increased proportion of high twist rayon yarn for seamless stocking production.

(*d*) Whilst we can appreciate the caution with which manufacturers approach the possibility of installing machinery of very fine gauges, we have doubts about the adequacy of the seamless stocking industry's plans for re-equipment. We recognise that the machinery builders will have difficulty in dealing with the industry's requirements even at the level planned by the industry and have dealt with this matter in Chapter V. On the assumption that measures can be taken to assure an improved rate of supply of machinery we recommend that the industry should reconsider its plans for re-equipment.

(*e*) The introduction of automatic finishing processes is, in our view, desirable. We believe that the industry generally is beginning to appreciate this, and if as we understand the necessary machinery is not produced in this country we recommend that importation from the U.S.A. should be permitted.

(ii) WOMEN'S FULLY FASHIONED STOCKINGS

Consumption Target : This section of the industry offers by far the greatest scope for expansion though the difficulties in the way are very considerable. British fully fashioned stocking production was expanding rapidly immediately before the war. By 1938 it is estimated to have risen above four million dozen pairs and was providing a substantial part of the medium and better-class stockings sold in this country. The quantity exported was relatively very small, and in spite of a 43⅓% tariff there were very substantial imports, mostly of the cheaper types from Continental countries, mainly Germany and Czechoslovakia. These imports are estimated to have been well over four million dozen pairs in 1938.

In considering what level of consumption should be provided for in say five years' time, we started from the point that 1938 British consumption was in the region of nine million dozen pairs, of which more than half were imported. As a first step we agreed on the desirability of providing for home consumption from

British production. We are confident that this is necessary not only because of the considerable saving in the expenditure of foreign currency but also because the work, which uses mainly British-made material and yields good wages under good conditions, is, in our opinion, very suitable for this country. During the war, owing to scarcity factors and the premium put on good wearing articles by rationing, the popularity of fully fashioned stockings has increased. We appreciate that for some time at least prices will be higher than was the case before the war. We believe, however, that considerable reductions should be possible as a result of the economies consequent on the increased level of production envisaged, and on the high level of efficiency attainable with the new machinery and layouts. We have also noted with interest that in the U.S.A. about 80% of the women's stockings produced are fully fashioned whereas in the United Kingdom pre-war only one-third of sales were fully fashioned types. After careful consideration we feel satisfied that, taking into account the present anticipated higher level of purchasing power and the increased popularity of fully fashioned stockings, it would be desirable to aim at a yearly output of 12 million dozen pairs. Because of the great difficulties standing in the way of speedy achievement of this level of production we have adopted the figure of 9 million dozen as the interim target bearing in mind that the scope for a higher level of production will have become clearer before the industry is equipped to reach the figure of 9 millions. Table 9 below illustrates the position :

TABLE 9

OUTPUT AND ESTIMATED CONSUMPTION OF FULLY FASHIONED STOCKINGS

YEAR	BRITISH PRODUCTION (million dozen pairs per year)	% OF 1938
1938	4.0	100
1945	2.0	50
Possible consumption level attainable—		
Interim	9.0	225
Full	12.0	300

In setting the interim and full targets of 9 million and 12 million dozen pairs per year, we must consider the question of imports. We appreciate that it is the duty of the Government to arrange for the provision of supplies adequate to meet the needs of the public and that in so far as British stocking production is not adequate the Government may find it necessary to permit importation. We believe, however, that if the Government, the manufacturers, and the workers in the industry will tackle the immediate problems with energy and determination in getting this section of the industry working at the fullest possible capacity, and provided also that adequate supplies of new machinery can be made available in time, the industry will be able to produce an increasing flow of stockings sufficient to cope adequately, or nearly so, with the needs of the public. The National Union of Hosiery Workers have given an assurance that, so long as the machine capacity remains limited they will raise no objection to three-shift working to provide the consumer with the maximum output of which the industry is capable.

Substantial importations of foreign stockings in the next few years would act as a serious brake on the development of production in this country resulting in permanent damage to the long-term prospects. We are firmly convinced that development on the scale indicated by the target figures we have suggested

would be very much in the long-term interests of the country. We feel that all possible steps should be taken to secure this development and that, during the growth of the industry, these long-term interests will justify some degree of temporary scarcity which could otherwise be relieved by importation. At the same time we must stress that it is the responsibility of the industry to take all steps to equip itself to an adequate level and to make it plain to the Government that this is being done so that the latter will feel justified in giving any necessary protection.

Raw Materials : As we have already stated in connection with seamless stockings there is room for closer collaboration between hosiery manufacturers, spinners and throwsters. Lack of consistency and quality of yarn affects fully fashioned production seriously and the need for research is urgent both because of this, and particularly because of the anticipated considerable expansion of production. For example, the use of high twist rayon was largely undeveloped before the war and a large variety of twists were made in each count. We do not suggest that manufacturers should be limited in any way in getting the twists which they regard as necessary for their work. It does, however, seem that if the most successful twist or twists in each count for normal purposes could be determined, the concentration of ordering on these lines should diminish considerably the substantial existing price difference between twisted and untwisted rayon.

The twisting of rayon hosiery yarns was normally done in this country pre-war by the silk throwsters though in the U.S.A., where the use of high twist yarns has progressed much further, a number of mills have their own throwing plants. Capacity in Britain before the war was adequate to meet the needs of the growing industry, but considerable development in the use of twisted yarns is likely. This factor, with the anticipated increase in British production, may increase the demand for twisted yarn to as much as five times the pre-war level. To cope with a demand of this size a substantial increase in capacity will be necessary, and, in so far as hosiery manufacturers expect to require such increased supplies and are not proposing to lay down their own plants, we suggest that they would be well advised to discuss their anticipated requirements with the silk throwsters or the rayon producers who will then be in a position to consider expansion.

About two-thirds of the fully fashioned stockings produced in the United Kingdom before the war were made of silk. Present supplies of silk are very limited and the price is six to eight times the pre-war price*. Future prospects are very difficult to assess in the absence of any indication of the extent to which supplies are likely to be available from Japan which was the principal source of supply before the war. We have referred to this question again in Chapter IV.

Nylon has become an important material for stocking production in the U.S.A. and may be expected to have a considerable influence on United Kingdom stocking production. Unfortunately the supplies available to British manufacturers are likely to be limited for some time, and this will have a retarding influence on development of nylon stocking production. Development has gone a long way in the U.S.A. and over 8 million dozen pairs of fully fashioned nylon stockings were produced in 1941 (the peak year). In the United Kingdom, the nylon produced during the war was used for war purposes, and only now for the first

* The price of silk was reduced to about four times the pre-war price between the date of signature and the date of publication of this Report.

time is nylon becoming available for the manufacture of stockings. The future prospects of nylon yarn supplies are referred to in Chapter IV.

Buildings : We are disturbed by the uncertainty of the building situation as it is related to the future of the fully fashioned stocking industry. Elsewhere in this report the vital requirement of machinery for this section has been discussed very fully. There is not sufficient space of the type required existing within the industry to house the large number of machines and ancillary processes which will be required. We are aware that the Development Area policy has guided a number of industries to those areas and that existing buildings or special new building facilities have been granted, but an adequate flow of new knitting machinery will not be reached before the end of 1947, and the process of expansion will occupy the years of 1948 and 1949. One Development Area is now closed to new entrants and we understand that the other areas are rapidly filling up. We wish to record that in our view it is essential that some facilities should now be granted for future building programmes, taking into consideration the time factor necessary for the housing of this machinery as fast as it is produced. It is not too early for such building schemes to be considered immediately, and very soon it may be too late. We urge that a long-term view be taken now and the extent to which the Development Areas will be saturated by 1948 and 1949 should be taken into account.

A survey was made, on our behalf by the industry, of the number of additional multi-division fully fashioned stocking machines which would be required during the next five years and of additional floor space to instal them. The result gave a requirement of rather over 1,100 machines, of which over 250 were in replacement of existing machines. For all these (with ancillary processes) the industry has stated its requirements to be approximately 600,000 square feet of additional floor space. Of the new building work required 30% is from firms in Hertfordshire, 16% in Sutton-in-Ashfield and Mansfield, 15% in Nottingham, 14% in Hinckley, 14% in Derbyshire and 11% in Leicester.

The following passage from the report made by our members who visited North America indicates the position in the U.S.A. :—

> " With but few exceptions the type and structure of factory buildings conforms generally to those of Great Britain, being mostly of the multi-storey type. The size of rooms within the building was, however, generally of greater area than those in the majority of British factories. We were struck by the number of old three to six storey buildings in use compared with those of single storey structure, and although opinions were expressed that the modern single storey factory might have advantages over the multi-storey type of building it was conceded to us on pressure of inquiry that provided the multi-storey building was adapted in the first place for the production of fully-fashioned stockings, it was possible by the use of modern conveyor and general communication devices from floor to floor so to equip such a building as to be an advantage even against the larger area floor space that would be required for the same production in the single storey building.
>
> The development of the single storey factory is largely to be found in the Southern States, where the production of fully fashioned stockings is of comparatively recent installation, largely brought about by the migration of part of the industry from the North. Most of these factories were designed to house the more modern type of machine, whereas the older factories of the North were built during the period when the fully fashioned machine bore no comparison in size to the latest developed types in operation to-day.
>
> It is noticeable that the development of the modern machine has created problems in the American industry similar to those experienced in this country in relation to factories. Many existing factories in America have been compelled to resort to a variety of forms of expediency in adapting the larger machines in buildings originally erected to accommodate the older and smaller type."

This passage gives an interesting indication of the trend of thought in the U.S.A. on the question of single-storey versus multi-storey buildings. An important factor not previously mentioned is the number of machines to be installed. Obviously if the number is very large the floor area of a single-storey factory would be enormous and we are inclined to think that when an optimum size is passed (say 100 machines) single-storey buildings lose rather than gain in effectiveness.

Modern fully fashioned stocking knitting machines are large and intricate and need special buildings with wide unrestricted floors and free from vibration and dust. It is now recognised that more than normal attention needs to be paid to the control of temperature and humidity and it is interesting to note in this connection that our members who visited America formed the opinion that general U.S.A. practice in air conditioning is no further advanced than that prevailing in this country. Very few British hosiery factory buildings are suitable for installing the modern 30 division machines. The expansion needed to meet even the interim target we have suggested is larger than that suggested by the survey referred to earlier and would probably be at least 800,000 square feet.

We recommend that appropriate employers' organisations with the support of interested firms should commission a competent architect to produce a specification of a suitable building which could serve as a model for these firms.

Labour : Here again practically all our comments on the seamless group apply also to the fully fashioned group. It is estimated that approximately 14,000 additional operatives will be required to increase production from present figures to the target of 9 million dozen pairs, and this very considerable increase will naturally call for very special arrangements in a period when demands on labour will arise from many other sections of the industry, and from other industries also. It follows therefore that of all sections of the industry the greatest gains arising from better selection and training will be realised in the fully-fashioned section, and it may well be considered the spearhead of advanced technique in almost every field of productive improvement. Reference to the machine position will reveal that knitting machine availability is likely to be a severe bottleneck for some years, and we consider it essential to utilise these machines for the maximum hours possible. This means three-shift working where possible for all suitable fully fashioned knitting machines (male labour), and both employers and trade unions should, as a national responsibility over these difficult years, further encourage full utilisation. Difficulties in connection with machinery for linking, seaming and other ancillary operations will be much less serious provided the industry places timely orders for this equipment and shift working in these departments should be largely avoidable. It seems on the whole likely that for some years there will be a shortage of women and girls for these ancillary jobs, and recruitment, selection and training arrangements, as well as the use of the most up-to-date types of machinery, will be matters of great importance.

Machinery : The following tables show the equipment for production of fully fashioned stockings held by British firms according to a survey made in June, 1946 :—

TABLE 10

TOTAL MACHINES IN THE UNITED KINGDOM

	FULL FASHIONED FOOTWEAR ALL GAUGES					
	LEGGERS			FOOTERS		
	I.P.	C.D.	TOTAL	I.P.	C.D.	TOTAL
British	431	195	626	126	78	204
Foreign	927	296	1,223	152	86	238
	1,358	491	1,849	278	164	442

Foreign machines include 165 single head leggers and 45 single head footers.
NOTE.—I.P.—In production. C.D.—Closed down.

These figures show that the major portion of all machines are foreign, mainly German and American.

TABLE 11

MACHINES (LEGGERS) AVAILABLE BY GAUGE

	30G	33G	36G	39G	42G	45G	48G	51G	54G
In Production ...	85	157	23	123	391	477	37	25	40
Closed Down ...	62	64	25	33	159	76	10	19	43

Total machines of all gauges in production	1,358
,, ,, ,, ,, ,, closed down	491
	1,849
Total machines of 42G and finer in production	970
,, ,, ,, ,, ,, ,, closed down	307
	1,277

Of these machines 165 are single head types.

TABLE 12

MACHINES (LEGGERS) AVAILABLE BY DIVISIONS

NUMBER OF DIVISIONS	NUMBER OF MACHINES
1	165
8	2
10	10
12	299
14	1
16	116
18	251
20	204
22	1
24	695
26	33
28	72
	1,849

The following extract from the report of our members who visited North America throws an interesting light on the U.S. fully fashioned machinery position.

"With regard to knitting machines there is no doubt that America generally has a great advantage over Great Britain. From 1936 to 1942 great strides were made in replacement of older types of frames by the more modern type of machines. The development tendency is almost exclusively towards finer gauges, mainly

51 gauge of the 30 section type. While from 1942 to the end of the war machine production ceased, it is of particular importance to note the development taking place to-day as shown by the construction programme of the Textile Machine Company of Wyomissing, Pennsylvania. Even though this company is at the moment experiencing some difficulty in finding a sufficiency of skilled workers, they are, nevertheless, making rapid strides in bringing machine production to a full completion of programme output. It is estimated that their output of 30 section 51 gauge machines will rise from 10 in the month of March 1946 to between 60 and 80 by September of this year, and will certainly reach the 100 mark as a monthly output by 1947. It would appear conclusive that the American fully fashioned stocking industry has satisfied itself that for some time to come 51 gauge will constitute the bulk of production.

In almost every mill we found a process of conversion of old 42 and 45 gauge machines into 51 gauge. Much too has been done in the extension of old 18 and 20 section machines into 30 sections; in almost all cases accompanied by a change of gauge to 51. This policy was advocated strongly by the Post War Policy Committee of the National Association of Hosiery Manufacturers in 1944, and has been accepted as the only expedient in meeting the demands of the immediate future for fine gauge hosiery during the period of machine construction rehabilitation from its war-time commitments. It is estimated by the hosiery trade of America that machine production will not reach the normal requirements of the American consumer demand for hosiery for at least three years, even though the whole of such machine production is ear-marked for the home trade.

CONCLUSION 5

America has already a tremendous start on Great Britain in the production of fully fashioned knitting machinery. There is also a far greater appreciation of the needs of the future in relation to production of fully fashioned stockings, as shown by the virility with which manufacturers have tackled the adaptation of old machinery to future requirements.

CONCLUSION 6

We are assured from all the evidence we have taken that unless speedy action is taken in Great Britain to develop production of fully fashioned machinery the prospect of our taking a place in world markets for this type of production will be delayed for at least 10 years, and it might well be at such a time too late to attempt to capture such markets.

CONCLUSION 7

Apart from the experimental machine in operation in Berkshire Mills operated by electronic control, there is nothing unusual in either type or general construction of the new machines now in production in America. The machine in general is a counterpart of the modern pre-war German-built fully automatic welt turning machine now in operation in certain firms in Great Britain.

CONCLUSION 8

Given a fair opportunity and some degree of encouragement we see no reason why British machines should not hold their own against those now being built in America. . . ."

The tendency for the gauges of women's stockings to become increasingly finer has obviously become very pronounced in the U.S.A. It may be that the need for very fine gauges will be less marked in Britain, but it is clear that all machines of less than 42 gauge must be regarded as largely obsolete against the requirements of the general market, although there will still be a specialised market for fully fashioned stockings of heavier weight in cotton, rayon, wool and mixtures of such yarns made on up-to-date machines of 36 gauge and 39 gauge. Apart from this the future usefulness of even 42 gauge machines after the present shortages disappear is doubtful.

Another important aspect is the output per machine and in this connection the extension of 18 division and 20 division machines to 30 divisions by U.S. manufacturers is significant. It is to be noted that for example the production of a modern 30 division Reading machine making a particular type of stocking amounts to about 154% of the production of a pre-war 24-division Kalio machine making similar stockings. Again, from a productivity point of view much of our existing machinery must be regarded as obsolete though a good deal

of it can and should be used to the maximum possible extent during the period of re-equipment.

To provide the output needed to reach the interim target of 9 million dozen pairs we estimate that 1,500 new machines working an overall average of two shifts will be needed. This includes provision for replacement of machinery which, owing to coarseness of gauge or inferior productive capacity, will not be suitable to cater for the demand in four years' time. As we have stated the industry has estimated that some 1,100 new machines (including about 250 for replacement) will be needed during the next five years. Another survey (see Table 31, Chapter V) indicated that during the next two years the industry estimated its requirements as about 780 machines of which 134 were ordered.

Various firms in the industry do not appear to be locating their proposed expansions in the Development Areas. The preceding paragraph indicates that the industry is setting its production target considerably below the level which seems to us to be desirable. It may be that this lower target is in fact considerably influenced by the industry's views about labour prospects in hosiery areas allied with a general disinclination to consider setting up factories outside traditional areas. It may be that manufacturers are doubtful about the competitive influence of seamless nylon stockings. Whatever the reason we repeat our conviction that there is urgent need for expansion of production to 9 million dozen pairs per year and that attainment of a final level of 12 million dozen pairs per year should be both possible and desirable. It would be difficult, though not impossible, for a fully fashioned stocking factory to be started in a non-hosiery area without the assistance and support of a parent factory from which a nucleus of key workers could be drawn. It therefore seems that the country must look to existing hosiery firms, in particular to the women's stocking producers, for at least the bulk of the expansion needed to reach the target. If existing hosiery firms should prove insufficiently enterprising we think it not unlikely that outside enterprise will be attracted despite the difficulties. Under such conditions the Government will no doubt encourage new firms to enter the industry, especially in Development Areas, and provided that these new enterprises are soundly based financially, the only objection we see is the difficulty of obtaining a nucleus of skilled workers. We would strongly urge that those manufacturers contemplating such expansions should give very careful consideration to the desirability of setting up expansion plants in localities usually described as Development Areas where suitable labour is most likely to be readily available.

The assistance from Government and local authorities which is available for such expansion is a factor which should not be ignored. In considering the possibility of such a venture manufacturers should bear in mind not only the existing British example but also the successful establishment of a large and flourishing fully fashioned stocking industry over a period of a few years in the Southern States of the U.S.A. Another point which should be borne in mind is that the sooner each firm makes its plans and arrangements the wider will be its choice of a suitable location. Clearly when arrangements have been made in any area for the establishment of new projects, which will absorb the labour available in that area, it will be incumbent on the Government to discourage the establishment of further projects there.

In the national interest the Government should do all in its power as a matter of urgency to encourage and assist the expansion of fully fashioned

stocking production. While such encouragement and assistance will naturally include facilities for the erection of new factories and the extension and alteration of existing factories the most vital question is that of knitting machinery.

Importation of fully fashioned knitting machines from the U.S.A. is not likely to be practicable for some years, owing to the demands of the U.S. home industry, except in special circumstances which will apply in the case of a few firms only. With their own unaided efforts British machinery makers will fall far short of meeting the demand foreseen. The former German factories which produced suitable machinery are all in the Russian zone and their future is problematical. *It is therefore clear that special steps need to be taken immediately* and, as mentioned in Chapter V, we are seriously disturbed that no satisfactory arrangements have yet been made for Government assistance to the machine builders. We consider it a matter of importance that the new British machine should be subjected to suitable factory tests as early as possible. We also consider that arrangements should be made for publication to the industry both of the results of such tests and of estimates of the rate at which the machines will become available for use in the United Kingdom.

The problem of machinery for linking, seaming and other ancillary operations is less serious and provided that the necessary orders are placed in good time the machines should be available when required, particularly as the Kohler type of linker is now being produced by a British firm. If we assume as a starting point that the existing linking and seaming machines (single shift) can deal with about $4\frac{1}{2}$ million dozen pairs per year, a further 1,000 linkers and 1,200 seamers will be needed to make up the balance to 12 million dozen pairs. In so far as the French foot style of stocking is produced one side linker will also be needed for each main knitting machine producing this type. In addition replacement of some of the existing linking and seaming machinery is likely to be necessary. It is interesting to note in this connection that our members found that the majority of U.S.A. manufacturers they visited were using the latest Sotco model. The linking operation was generally regarded as a far less skilled job than fully fashioned seaming it being contended that it took longer to train a seamer than a linker, and the rate of pay differed accordingly.

Production questions : Most British units are small and the largest American producer is equal in size to the whole British industry. The division in this country is :

Number of machines	Number of Units
Up to 10	17
11 to 20	12
21 to 30	8
31 to 40	9
41 to 50	3
51 and over	8

We find that opinions vary as to the optimum size of unit and we have not been able to make a sufficiently close investigation to resolve this important question. We must therefore leave the question but would emphasize that it needs expert investigation preferably by the interested Trade Associations with the co-operation of the Hosiery and Knitwear Council.

While visiting the U.S.A. our delegation in consultations with the trade unions learnt that, as is the case in the United Kingdom, the accepted practice under agreements between organised labour and employers was one machine per operative irrespective of gauge or number of divisions. They did, however, observe in one non-union factory a number of cases where two fully fashioned machines were operated by one knitter with one helper. They also saw three girls each working a knitting machine and understood that, while these girls had given satisfaction, their employment in this work was temporary and due to war-time expediency.

As the following quotation from the report of our delegation shows, American practice in examination is far advanced and further developments seem not unlikely :

> " It was obvious to us that in most plants the utmost care was taken in the inspection of goods in each of the various processes of production. The types of machines used in the initial inspection from the time the goods were linked and seamed varied only in type and construction and not in general effect. Mostly they were the advanced types of expanding machines, some fitted with mirrors, the very latest type with counting devices also, all of which gave the operative a full and easy field of vision over the whole stocking, enabling the operative with great dexterity immediately to find any flaw or damage in the stocking at this stage. We were left in no doubt that in this field of examination great strides had and were being made. Similar types of machine are in use in Great Britain in some units of production, but we have no knowledge that the latest type that we saw in America is in use in this country. We got the impression that even now most American mills were still not satisfied that they had found a complete answer to efficiency in this important operation, and much may be heard in the future of still further developments in this most important field."

The following passage from the report of our delegation shows the general production set-up and technique in the U.S.A. :—

> " The common practice appears to be the operation of a two-shift system (5-day week) on knitting machines, the first shift starting at 6 a.m. and changing over at 2 p.m., while the second shift continues until 10 p.m.
>
> We particularly observed supervision of plants from a mechanical standpoint, and were interested to find that generally speaking it was not so plentiful as compared with most shops in Great Britain. It was not uncommon to find one mechanic to a room of 30 or 40 machines. To find the answer to plants of machinery obviously running so well with apparently such sparse mechanical attention we first looked for the reason at the machines themselves. In the first place we were struck by the obviously high standard of operative skill as shown by performance in all the mills we visited. We learned that in training of operatives a far more selective method was adopted than that generally observed in Great Britain ; this, however, was but part answer to our question. We then observed how carefully each mill endeavoured to maintain machinery in producing one class of work over long periods, thus reducing dislocation of machines through changes to an absolute minimum. We were informed that it was not an uncommon practice for the bulk of machinery to run for at least 6 months without a change of style.
>
> It then came to our knowledge by inquiry that with the exception of the purely knitting mechanism of the machines it was the practice in the large mills to employ cleaners to clean the machines outside knitting hours, thus ensuring full knitting production for the maximum number of hours of the knitters' employment within the factory. It was generally observed too, that greater attention was paid in most mills to space between machines, thus affording operatives more room in which to work than is customary in Great Britain. In one mill where we commented upon the space afforded between machines, we were told they were considering putting the machines closer together in order to enable the two knitters in each alley the more readily to assist one another. This practice of mutual assistance in the alley of knitting machines we found to be the common practice and not the exception.
>
> In all plants, union and non-union, the remuneration of the knitter was based on payment by result, although we found anything but a common formula of payment for the same type of stocking on the same type of machines in the mills

we visited. Here again such differences as we observed were due to our visits to non-union shops, since in all union establishments there is applied an agreement covering the industry on a standard basis.

In all mills we found the standard and method of inspection such as to narrow the time limit between the knitting and finishing of the stocking to an absolute minimum. Apart from the inspection machines already referred to special inspection apparatus was used by trained girls to keep a constant check on quality by course counting. It was claimed in most mills that each division of each machine was checked for quality in this manner at least twice per week. It was patent to us that such careful scrutiny was far from wasteful; it enabled production to go forward with complete confidence in the minds of all producers that any defect in construction of the stocking would be found before any great quantity had been produced. Again in most mills each knitter makes by fashioning marks his own identification in every stocking he makes, so that at any time, either during production or after the goods had left the mill in a finished state, any returns could be identified back to the machine and the knitter who had produced them.

In some respects the time and effort spent in testing goods for faults, quality, stretch, volume and general wearability seemed to have gone to the limits of absurdity until one traced back the cumulative effects of this examination to where it mattered most—the knitter. It was then we appreciated to the full the reasons why the standard of knitters themselves was so good and why mechanical supervision had been reduced to such economical limits.

CONCLUSION 10

Finalising our observations on this aspect of ' Production Efficiency ', we were satisfied that generally speaking, American manufacturers have profited by the care and attention they have given to their production, and in particular to the manner in which they have trained their operatives and the high standard of efficiency expected of all concerned."

As is shown by the foregoing, American producers have given great attention to quality control and to conditions for maximum efficiency of the operatives, and have profited by this course. The American industry has of course the advantage of a home market of greater size. Some of the firms are much larger, and the conditions in which they work differ in some ways from those in this country. Nevertheless we believe that in this particular field British producers have something to learn from the best American producers. We hope that they will study the position closely particularly in relation to any re-organisations or expansions contemplated.

It should not, however, be assumed that the American operatives work harder or are more efficient than their experienced British counterparts and in this connection we quote the following further passage :

" Since we found no evidence in America of either desire or intention of instituting three shift working, and bearing in mind that up to 1939 it was the almost universal practice in the British fully fashioned stocking industry to operate on a 24 hour production basis, then it is obvious that British production per machine was far higher than that of America. In measuring the output per worker we examined very closely indeed the production of various types of machines from the speed performance of the machine to the operative performance, and we are satisfied that as a general average, taking machine for machine, style of stocking for style, the productive capacity per operative in the fully fashioned section in America is no better than that of the performance of the British knitter. It must not be assumed, despite the efficiency of the industry in America, that they have created either super machines or super knitters. We believe we have given full credit for their advancement in the field of machinery, but we are convinced from all that we have seen and all that we have learned from contacts that, given the same facilities the average experienced British knitter would produce equally with his American counterpart. We would suggest, however, that the general standard as judged by what we saw in America is perhaps of a generally higher level than that in British industry to-day; at the same time we found the same human differences reflecting themselves in the production of knitters working the same type of machine, the same type of stocking, in America as we find in our factories in Great Britain."

It is significant that few British manufacturers of fully fashioned stockings visited by some of our members appeared to know immediately what was the percentage productive efficiency achieved by their knitting machines. Figures given to us varied from 60% to 100% and as the latter figure is impossible in practice we are led to the conclusion that this most important control figure is not understood and used as frequently as is desirable. This is discussed again in Part G of this chapter but at this stage we must point out the extreme importance of taking every step which leads to a greater utilisation of fully fashioned stocking machines and we feel that better methods of quality control are an important aid to this. As in other spheres, the setting up of first-class standards, specifications and checks will invariably make for more consistent running of the machines, higher quality production and lower overall cost. In this section, as indeed in all others, manufacturers consistently point to the desirability of limiting the range of types produced, both in design and shade. This is a most important aspect of productive efficiency and " value for money," and is discussed in greater detail elsewhere in this report.

As the following quotation from the report of our delegation shows, there are two different practices in countering of goods in the U.S.A. :—

" It was from the time the goods left the trimming section and entered the warehouse department that we again saw a great difference in the handling of production from that employed in Great Britain. While methods varied from mill to mill, generally speaking, as against the British approach to this operation, there was a breakdown of the operation into at least two distinct sections. In all firms pairing was an operation in itself; the pairing operation depended upon the type of examination conducted before the goods came to be paired. In some mills there was an inspection before pairing, in which case the pairer concentrated on the one job. In most cases, however, the pairer conducted an examination of the stocking and graded the goods into firsts, seconds, thirds and throw-outs.

We found some difficulty in determining by what method mills conformed to the practice of providing a varying length size to each foot size. In some instances such variations were made on the machine according to size and length specification, but we were satisfied that out of each of these groups the pairer eliminated from each group any length of stocking that did not come within the half inch or one inch tolerance allowed in length for each length size, which was then put on one side and incorporated in its own size bracket. In other words, we were satisfied that America had not solved the question of maintaining uniformity of length in the finished garment, but that the requirements of the public were to some extent met by the appropriate description of the goods as to leg length and foot size when boxed for sale.

We found the universal adoption of ' transferring ' done by semi-automatic (Kaumagraph) vertical handled transfer machine operated by the foot, the transfers being hand fed from a roll as against the British method of flat iron and single transfers. There is no question in our minds that a great economy of time and effort resulted from this one improved operation.

In some instances the goods were passed to a folder and from the folder to the boxer who inserted whatever rider tickets were to be used. In other instances the whole process of inserting rider tabs and boxing was done as one operation. Quite a considerable proportion of American production is packed in cellophane bags, and here again the folder or boxer as the case may be completed all operations.

A feature of this department were the tables at which the girls worked. In most mills the pairers and folders were working at beautifully constructed white opaque glass topped tables which gave an ease of movement to the operative far beyond anything we have seen in the warehouse of a British manufacturer. Small in detail, but none the less effective, was the tilt of these tables in some mills, thus ensuring complete comfort to the operative by reducing to a minimum the bending required to lay out and scrutinise the stockings.

CONCLUSION 11

In this department of production we found it extremely difficult to arrive at a conclusion as to whether the American method was more advantageous than that generally adopted in the Midlands of Great Britain. It should be made quite clear

that to a large extent this same American method is in operation in fully fashioned mills in the South of England and in certain parts of the Midlands, although not carried, perhaps, to the detailed extent of the U.S.A.

In our opinion there are two approaches to this problem in arriving at a conclusion :

(*a*) The cost of each method in labour ;

(*b*) The floor space required by each method.

With regard to (*a*) we find it extremely difficult to arrive at a decisive answer since the productive methods themselves varied so considerably, and cost of necessity varied according to the amount of inspection and work put into the goods in the various mills. We formed the general conclusion, however, that as far as cost is concerned the American method might, in total, be less than that where men are employed in Great Britain to do the whole operation, but we would not use this as any argument to give preference to their method as against our own. What did impress us by this method was that the inspection of the goods underwent a greater scrutiny than we believe is general in the final stages in Great Britain.

As to (*b*) there was no doubt in our minds that a far greater floor space was required by the American method to deal with the same quantity of goods by their method as against our own."

In concluding our review of fully fashioned stocking production it is of interest to note that progress is being made with the development of " ladder proof " fully fashioned stockings though no details are yet available about this matter.

CONCLUSIONS AND RECOMMENDATIONS—PART A (ii)

(*a*) In our opinion there is urgent need for substantial expansion of British fully fashioned stocking production and we recommend that every effort be made by the Government and the industry to provide for expansion to a level of 9 million dozen pairs per year while not losing sight of the suggestion that expansion to or beyond 12 million dozen is desirable and likely to be practicable.

(*b*) Closer collaboration between hosiery manufacturers, yarn producers and throwsters is necessary in their common interests.

(*c*) With the expansion of the industry and the increasing popularity of high twist rayon yarns (enhanced perhaps by measures arising from (*b*)), a very substantial increase in capacity for the processing of these yarns will be needed and we recommend that manufacturers proposing to increase their rate of usage should give early advice of their intentions to their suppliers.

(*d*) A substantial amount of new building work will be required to provide the expansion referred to in (*a*). Much duplication of work in designing the new buildings for housing the expansions contemplated could in our view be avoided by engaging a competent architect to work out (with appropriate technical advice) a specification for the most suitable type of building. We recommend that the appropriate Trade Associations with the support of interested firms should arrange for this work. We also recommend that the Government should give all reasonable assistance with the building programme.

(*e*) The future of the industry is dependent to a very great degree on availability of sufficient machinery during the next three to five years. We recommend that 1,500 to 2,000 machines should be made available to British firms in the next five years. Immediate action by the Government, the machine builders and hosiery manufacturers, to secure the provision of these machines and of the associated ancillary machines is essential and further reference is made to this matter in Chapter V.

(*f*) We consider that manufacturers contemplating expansions should give very careful consideration to the desirability of setting up such factories in Development Areas where suitable labour is most likely to be readily available.

(*g*) We recommend that the need for new buildings to house the new fully fashioned stocking machines as they become available should be considered immediately and that where necessary facilities for such building work should be granted now. We also urge that the extent to which Development Areas will be "saturated" by 1948 and 1949 should be taken into account by the Government in considering the location of new hosiery projects in those areas.

(*h*) There is considerable scope for advances in production methods and quality control and a good deal can be learned from U.S. practice about such matters as specifications, machine usage, a closer watch on machine efficiency, and closer checking and inspection, and we recommend that the industry should make a careful study of the position and take advantage of reorganisations and expansions to experiment with new techniques.

A (iii). FOOTWEAR OTHER THAN WOMEN'S STOCKINGS

Consumption target : The main types of production included under this heading are shown in Table 13 below with the approximate British production figures for 1938 and 1945.

TABLE 13

PRODUCTION OF MAIN TYPES OF FOOTWEAR OTHER THAN WOMEN'S HOSE

TYPE OF PRODUCT	OUTPUT IN MILLION DOZENS PER ANNUM	
	1938	1945
Men's socks :		
Coarser than 100 needle ...	1·2	2·2
Finer than 100 needle ...	6·0	1·8
Women's ankle socks	1·5	0·9
Children's socks	4·0	3·2
Children's stockings and socks (including girl's stockings and ¾ hose and boy's hose)	3·0	2·1
TOTALS	15·7	10·2

We do not think that, as far as United Kingdom consumption is concerned, the level is likely to be a great deal higher than pre-war, but there is in our opinion room for substantial expansion in the pre-war volume of exports which was well under 10% of total output. Our members who visited North America formed the opinion that a considerable expansion of exports of men's all-wool socks to that market can be achieved. This is subject to the proviso that British manufacturers maintain their lead and are able to install machinery of the latest types in sufficient time to expand exports and create goodwill before the market settles down to normal peacetime conditions.

After careful consideration of the position we are of the opinion that, allowing for some increase in the level of United Kingdom consumption, an overall expansion of 15% to 20% in volume of sales can be achieved if full advantage is taken of export possibilities. We would expect over 60% of this expansion to be obtained in the field of men's medium and high quality socks alone.

Raw Materials : This section used a very large range of types and qualities of yarn pre-war. We understand that yarn deliveries pre-war were not always dependable owing to the unreliability of some spinners whose variation of count took undue advantage of permitted tolerances, and also to lack of continuity of production. This latter factor, which is not peculiar to this section, together with fluctuation of raw material prices, has greatly handicapped this section in common with the industry as a whole.

Buildings : Little new building work is necessary in this section and there seems to be no great advantage as between single and multi-storey buildings. Because of the small size of the machines a very high proportion of the existing buildings are suitable for the application of modern methods and only internal reorganization may be needed.

Labour : The main difficulties are likely to arise from the anticipated shortage of women workers which will affect all sections of the hosiery industry. In this section both men and women knitters are used. Although women obtain the same output per machine as men a woman worker normally operates only about three-quarters of the number of machines usually worked by a man, except in the production of fancy socks. In our view much can be done to alleviate labour difficulties by the introduction of modern training methods and by a reasonable degree of flexibility to provide for the switching of workers, particularly women, to bottleneck operations. With the question of flexibility is bound up the question of a more scientific " rate for the job " which we have mentioned earlier in connection with seamless stockings. The greater productivity per operative obtainable from modern automatic machines will go a long way to provide for the expansion of production mentioned earlier without any increase in the labour force. It should, however, be noted that much of the machinery in this section, particularly for children's footwear, was operated three shifts before the war. As the industry has decided to eliminate night work in this section as soon as possible three-shift work will not be possible in the future. It has, however, been agreed that so far as production in England is concerned two-shift working should be adopted. There is no doubt, however, of the necessity for obtaining from existing modern machinery, and from the new machinery as it is received, production to the maximum level possible. We refer below and in Chapter V to the urgent need for assistance in connection with the supply of machinery. Equally we feel that it is incumbent on both manufacturers and trade unions to provide for the utmost use of all the suitable machinery available.

In the previous paragraph we have referred to the use of " suitable " machinery and, while we enlarge on this question of machinery later, we ought to point out at this juncture that suitability involves both type of product and output per operative. The following table gives a rough indication of the *average* productivity per operative of the main types of machinery :

TABLE 14

PRODUCTIVITY OF CERTAIN TYPES OF FOOTWEAR MACHINES

TYPE	AVERAGE PRODUCTION PER MACHINE PER WEEK* (dozen pairs)	NUMBER OF MACHINES		AVERAGE OUTPUT PER OPERATIVE PER WEEK (dozen pairs)
		PER OPERATIVE	TOTAL IN THE INDUSTRY	
Double cylinder machines (axially superimposed) of which approximately 35% are of XL type...	25	8	8,722	200
Semi-automatic (Griswold type) ...	8	1	576	8
Run-on-top machines ...	20	2	6,925	40
Other types (some suitable for coarse gauge women's stockings) ...	25	8	829	200
TOTAL ...			17,052	

* These figures are a weighted average between the outputs of coarse and fine gauge machines.

Table 14 shows a very great difference in output per operative from the various types of machines but makes no allowance for the difference in the products of these machines. It should be noted for example that despite the low productivity of the Griswold machines and the consequent high price of the articles produced, much of the production is for export, the products commanding a ready sale in the U.S.A. and Canada. Also many of the double cylinder machines are used for plain and ribbed socks whereas the run-on-top machines were mainly used pre-war for patterned socks.

There have been no recent changes in the machinery used for making plain and ribbed socks, but for fancy socks we expect a greater productivity per operative to result from the use of new automatic machines, in place of the older type of run-on-top machines. One operative can work six of these new machines as compared with two run-on-top machines. The output per machine of the new machines is lower than that of the old run-on-top machines, but due to the greater number which one operative can work an increase of approximately 50 per cent. in output per operative can be obtained by replacing the latter by the former.

Turning to another aspect of the problem of labour usage, we quote the following passage illustrative of American practice from the report of our members who visited North America :

> " In all cases visited the number of machines per operator was higher than in Great Britain."
>
> " . . . . for run-on top machines for half hose and socks the number varied from 3 to 5 machines per woman.
>
> As against this there should be noted the difference in the functional operations compared with Great Britain. In addition to mechanics who deal with mechanical defects and breakdowns there are also employed ' fixers ' who *inter alia* do all alterations to the machines necessary on account of size, quality of fabric, pattern changing and replacement of all needle breakages. They are usually ex-knitters who have shown adaptability and have been graded up. There is one fixer . . . . to 20 Wrap Stripe Fancy half hose machines.
>
> The knitters are not permitted in any way to adjust machines, but are solely responsible for machine minding and collecting the goods as produced."

We do not suggest that this system is necessarily more efficient in the usage of labour than the system prevailing in this country; indeed, those of our members who visited the American factories are strongly of the opinion that

British manufacturers have little to learn from their North American counterparts about the production of men's and children's socks. At the same time there is in our view a need for enquiry in consultation with British manufacturers and trade unions into the relative merits of the two systems, with a view to adoption of the most efficient practices whatever their origin.

Machinery : In Table 14 we have given numbers by types of the machines at present held by the industry, but without taking account of gauge, diameter and degree of obsolescence. It has not been possible to provide a precise breakdown which will take these factors fully into account but the following estimate gives a general idea of the position :

TABLE 15

POTENTIAL CAPACITY AND REQUIREMENTS

TYPE OF MACHINE	NUMBER OF MACHINES (APPROXIMATE)	POTENTIAL PRODUCTION (MILLION DOZENS, SINGLE-SHIFT WORKING)	POTENTIAL REQUIREMENTS (15%—20% EXPANSION ON 1938). (MILLION DOZENS)	SURPLUS OR DEFICIT BASED ON SINGLE SHIFT WORKING (MILLION DOZENS)
Children's diameters : $2\frac{1}{2}''$—$3\frac{1}{2}''$				
Double Cyl.,	1,800	3·0	8·0	−3·5
Run-on-top	900	1·5		
Men's and Women's diameters $3\frac{3}{4}''$—$4\frac{1}{4}''$				
Coarser than 100 needle ...	4,500	5·5	1·5	+4·0
Finer than 100 needle ...	9,800	9·7	9·0	+0·7
TOTALS ...	17,000	19·7	18·5	—

When it is borne in mind that much of the machinery mentioned worked two or three shifts pre-war it is clear that a good many of the older types of machines were idle. This is particularly noticeable in the case of coarse gauge machines many of which are likely to be surplus owing to the reduction in demand for heavy war-time socks. It should be noted in this connection that in the men's and women's diameters there are some 6,000 run-on-top machines and 7,000 fully automatic machines. The run-on-top machines give a low output per operator and, while retention of a proportion for the production of patterned socks is necessary, many are due for replacement by modern automatic machines. Of the 7,000 fully automatic machines some 3,200 are of coarse gauge and some 60% of these are due for retirement. Of the further 3,800 finer gauge machines probably more than 1,000 are of XL type and more than 20 years old.

The main demand for men's socks will fall in the fine gauges (132 needle and finer) and it is in this field that export prospects are brightest if full advantage is taken of present opportunities. Speedy re-equipment with up-to-date machinery suitable for the most economic production of the medium and better grades of socks for export is essential. Suitable types of machines have been designed by British hosiery machine builders. The prospects of adequate supplies reaching British hosiery producers in a reasonable time are very far

from satisfactory. As we have mentioned in Chapter V there is an urgent need for action in this connection and our remarks about preference in supply of machines to British hosiery manufacturers requiring them for production for export apply here with special force.

It is clear that existing machinery is not adequate to meet the anticipated need for children's stockings and socks even with double dayshift working. New types of machinery for this production are being demonstrated and there is a very great opportunity for taking advantage of an almost world-wide market for these goods if the industry re-equips itself quickly. Here again the speed of re-equipment is a factor of importance and the same difficulties in the supply of machinery prevail.

The linking machines in general use are of the non-steady small dial type and their production capacity is lower than that of modern large dial types. In view of the shortage of women workers, re-equipment with fast large steady dial linkers is essential to satisfactory development. It is interesting to note in this connection that in the American factories visited by our members, the majority of linking machines were of the large steady dial type.

Production questions.—As indicated on page 34 the American practice is to employ machine minders rather than knitters, whose machines are supervised by experienced operatives of a higher grade called " fixers." The function of the fixer is to alter the settings of the machines, replace needle breakages, etc. In addition, mechanics are employed to deal with mechanical defects and breakdowns. This was the most noticeable difference between British and American methods, and we have already suggested an enquiry into the relative merits of the two systems.

American factories which were visited were generally less well equipped with modern knitting machines than their British counterparts, but this was not true of the " finishing " section, where steady dial linkers are the rule. In addition, there is in use a speedier method of " transferring," on socks, by which a particular operative is said to transfer 900 dozens per day, even with a number of changes. Usually one sock of each pair is transferred, a roll transfer being used with irons having vertical handles. Pairing and folding are treated as separate operations in the U.S.A., faulty goods being thrown out by the pairers and passed to the menders for repair. An economy of cost and effort appears to result from this practice, which might with advantage be followed by more manufacturers in the United Kingdom. The goods are examined on boards after knitting and only faulty articles are sent to the menders. The present arrangements for continuity of production in the U.S. factories visited are of interest.

> " It is usual to run machines a minimum of 3 months on any particular design and ranges of an extensive nature are offered each 6 months. In one outstanding case it was stated that 1,200 different designs were included in each of the pre-war ranges but at present this is reduced to 600 designs. This concern distributes to 10,000 retail customers.
>
> " There appears to be no minimum size of order; another firm pre-war adopted a 60 dozen minimum but do not propose to reinstate this condition of sale in the post-war years. It should be noted, however, that only very large orders can qualify for ' confining ' and all other orders are executed from the range of goods coming through the mill in the normal flow."

The correlation of ordering and production in such a way as to provide for long machine runs without changes is a matter to which many British manufacturers need to pay more attention. We have referred to this problem from the

aspect of distribution in Chapter IX. It is, however, appropriate to mention here that better correlation leading to longer runs would provide for a substantial increase in the efficiency of this section. Long production runs are particularly necessary in children's socks as the price of the product is low, and a very large dozenage is needed to produce a moderate sterling turnover. Most manufacturers have preferred to use the ancillary machinery necessary, for finishing goods of much higher prices.

In this section we did not find, as was the case with fully fashioned women's stockings that U.S. production and quality control arrangements were in advance of those common in Britain. At the same time, we feel that there is room for improvement in production methods in British factories, and recommend that this section of the industry should give additional thought to this matter.

CONCLUSIONS AND RECOMMENDATIONS—PART A (iii)

(*a*) We do not anticipate any appreciable increase in the size of the long-term home market demand for the products of this section. Provided however, that manufacturers interested in exporting their products are enabled to obtain suitable modern machinery in a reasonable time (no longer than two or three years), and take advantage of opportunities available in overseas markets, we are of the opinion that export business can be expanded to a long-term level which will call for an increase in production of 15% to 20% (by volume) over the 1938 output.

(*b*) In common with many of the other sections, the manufacturers in this section would benefit, in obtaining their raw materials, from a greater degree of collaboration with the spinning industry.

(*c*) There is need for flexibility to provide for the switching of workers to bottleneck operations. Associated with this question of labour usage is the introduction of modern training methods, which is equally necessary.

(*d*) A good deal of the machinery used by this section is obsolete owing to coarseness of gauge or low production per operative. Speedy re-equipment with modern machines by manufacturers who make for export (particularly socks) is important for full and satisfactory development. Equal emphasis must be laid on the necessity for making the fullest use of existing modern machinery and of the new machinery as it is obtained.

(*e*) U.S. practice in the distribution of workers in the knitting departments differs considerably from British practice. While it is not suggested that the American method is necessarily the better, an expert enquiry into the relative efficiency of these two methods would be worth while and is recommended. We would emphasise strongly that neither traditional practices nor the fear of rendering existing equipment obsolete should be allowed to obstruct the attainment of maximum efficiency.

(*f*) The U.S. method of treating pairing as a separate operation during which faulty goods are extracted and passed to the menders appears to give an economy in cost and effort as compared with British practice, and we recommend that British manufacturers should consider adopting this method.

B. PRODUCTION ON FLAT BAR MACHINES

Introduction : The Flat Bar section of the hosiery industry makes coarse medium and fine gauge outerwear of medium-high quality on both power operated and hand operated machines. The bulk of the power machines are located in the Midlands and the bulk of the hand machines are in Scotland and the South of England. The name Flat Bar is derived from the type of machine.

Consumption Target : As mentioned in connection with Cottons Patent production and production on circular machines it is difficult to assess a reliable target of requirements but it is likely that an increase in sales of the order of 20% over pre-war sales by volume could be attained for some years at least. There is room for considerable expansion in infants' wear (though in view of the very high standards of output of the existing specialists in this trade only the most efficient firms will be able to enter this market successfully) while adults' wear might be expanded to some extent at the expense of the woven garment industry.

Raw Materials : As in other sections some improvement in the quality of yarns is desirable. Many Flat Bar firms are small (less than 50 workers) and are unable to carry out thorough checking of yarns as delivered. In some of the small firms variations of one count often pass unnoticed until the garments are knitted, when they will be of a different weight from that planned for. If they are heavier profits will be reduced ; if they are lighter the quality of the garment will be lower. This matter is referred to in Chapter IV.

Buildings : Power Flat Bar machines are fairly heavy and need to be placed on the ground floor unless the building is of adequate rigidity. There is no special type of building which is more suitable than another for this section, but any satisfactory floor space for power machines must permit arrangement of the machines in sets of four so that each operative can easily tend his four machines. Some additional building may be needed to accommodate extra machinery needed for the anticipated 20% increase in required output. Apart from this unless there are unexpected alterations in the size of machines over the next few years little building will be needed in the Power Flat Bar section, with the possible exception of work for welfare and canteen facilities. Hand machines are much lighter than power machines and call for no special building requirements.

The English Flat Bar trade is a comparatively new section of the hosiery industry having developed mainly since the 1914-1918 war, and as a result a number of buildings are fairly modern. In Scotland, however, where the hand machine is more usual, there are many firms operating in old buildings and some rebuilding may be needed here. In this connection the possibility of building large blocks of self-contained lock up factories should not be ignored. These need not be let only to hosiery firms.

Labour : The operation of a power machine does not demand a very high degree of skill or strength and by using modern training methods new operatives can be trained in under 6 months. Although the majority of power machine knitters are men, women can run these machines satisfactorily, though in view of the shortage of women operatives in the Midlands it seems likely that men will continue to predominate in the knitting rooms in that area.

Hand machines, usually operated by women, demand a higher level of skill in operation than power machines and the training period is at present recognised as about 2 years. There are few technical reasons why only women should operate these machines, and if women workers become scarce in the areas where Hand Flat Bar production is normally carried on men might well be substituted.

Machinery : The great bulk of the machinery used in this section is of foreign origin. Power machinery is supplied mainly from Switzerland and also before the war from Reutlingen in the French Zone of Germany. Hand operated machinery is also mainly obtained from Switzerland.

Power machinery is normally used for medium grade mass produced goods and even high grade products by certain specialist firms. There is little if any low grade Flat Bar production. Hand machines are used :—

(*a*) For high grade production.

(*b*) As ancillary machines to make collars and cuffs, etc. for garments made on power machines.

The normal output of the hand machine is from 25 to 50 lbs. of fabric a week while that of the power machine is about 100 lbs. On the other hand one operative looks after 3 to 4 power machines whereas a hand machine operative works only one machine. The power machine therefore has a weekly operative output 8 to 16 times as high as the hand machine. Although the hand machine can make fully fashioned garments and is more versatile than the power machine, this difference in output means a big difference in price and the future market for high priced garments (as distinct from well finished medium high-priced garments of types which can be made on power machinery) in this country, in our opinion, will be small. Before the war the output by value of garments made by hand machines was a very small fraction of the total output of the hosiery industry and unless there is a substantial increase in exports of this type of garment we think it probable that this trade will decline, though until fashioning and lateral stitch transferring is possible on power machines there will always be a place for hand machine production for making high-class goods particularly for export and also as an ancillary machine to power machines. If, however, as seems possible power machines can be built which will successfully carry out automatic fashioning processes together with automatic resetting to original width, the future of the Hand Flat Bar trade is bound to be seriously affected in the absence of compensating developments in Hand Flat Bar machinery. Despite the developments of Power Flat Bar machinery Scottish manufacturers are of the opinion that there will always be room for the Hand Flat Bar trade.

The tendency in the last 30 years has been for manufacturers in England to replace hand machinery by power machinery and we anticipate that this trend will continue. In Scotland, however, manufacturers have preferred to retain the hand machine. Of some £400,000 of Swiss machinery ordered in 1945 450 were power machines (costing £380,000) while 250 were hand machines (costing about £20,000). A survey made in the early part of 1946 showed that manufacturers estimates of requirements of Swiss machinery up to the end of 1947 were 700 power and 400 hand machines costing about £600,000. While it is true that the hand machine is not very expensive, we are not so confident of the future of the Hand Flat Bar trade as to regard this division of requirements as between power machines and hand machines with complete equanimity,

bearing in mind the relatively high labour requirements of hand machine production and its need of a wealthy market.

Of the power machinery in this country about 25% is more than 25 years old and capable of producing only a fairly plain fabric. A further 25% is between 15 and 25 years old and is capable of more varied output. The remaining 50% is both newer and faster being double system type. It is also more versatile than the older machinery, and being less than 15 years old is not very much inferior to the most modern machinery available. It will be necessary for the older machines to be replaced at a fairly early date, as the output of the newer machines is about two-thirds greater than that of the older type. As knitting costs are only about 20% of the total, the total cost of an equal quantity of garments would be about 13% higher in the case of those knitted on the slower type machine.

Production Questions: On power machines one operative normally looks after three to four machines. This number is determined mainly by the rate of rejects and we do not think that any larger numbers of machines could be operated adequately except by the most exceptional workers. In the hand machine section one operative can work only one machine at a time. This is a big factor against the hand machine since in the next few years labour shortage will necessitate the utmost use of workers and a machine which requires the full-time attention of one operative will be at a discount, when compared with one which requires but a quarter of an operative's time.

On coarse gauge garments the Flat Bar trade especially the hand machine output competes to some extent with the Cottons Patent trade, though in gauges higher than about 21 the Cottons Patent frame is much superior. A further point in its favour as compared with the Power Flat Bar machine is that there is no yarn wastage on the Cottons Patent frame, whereas the Power Flat Bar fabric is often cut to shape, the clippings inevitably being wasted.

The power machine makes fabric of fairly high quality either partly shaped or in a piece which is cut to shape after knitting. The making up of this fabric has in the past been well done by most firms and we hope this trend will continue. We must point out, however, that machinery developments in the circular knitted fabric section of the industry have made possible the production of high grade circular knitted fabric which if well made-up would compete seriously with Power Flat Bar garments. It will be necessary therefore for Power Flat Bar manufacturers to put a very high-class finish to their goods, and moreover to keep down their production costs so as to make their goods competitive with well made Circular garments.

Special points: At present the American outerwear industry is not the most efficient section of their knitted garment industry, and there is a big market in North America for well made knitted outerwear. We are informed, however, that American outerwear manufacturers are importing substantial quantities of the latest type Power Flat Bar machines, and if as a result of this they succeed in producing knitted outerwear of a higher standard than they have made hitherto this is likely to reduce the scope for foreign knitted outerwear in the United States market. To the extent that American Power Flat Bar manufacturers are able to produce garments of a good standard they may very well encroach on the market held by British Hand Flat Bar manufacturers. Admittedly Power Flat Bar production is at present some way behind Hand Flat Bar

production as regards quality; nevertheless the appearance of well made American Power Flat Bar garments in a market which hitherto sold only poorly made American Power Flat Bar products or high quality British Hand Flat Bar goods is bound to affect the business of both ends of the trade.

CONCLUSIONS AND RECOMMENDATIONS—PART B

(*a*) We consider that the Flat Bar section could expand by about 20%. This expansion will be greater in the power machine section and will be conditional on a high standard of making up being applied to output.

(*b*) We consider that the Power Flat Bar trade in the future will have to reckon with more severe competition in the home market from well made circular knitted outerwear than was the case before the war. The Hand Flat Bar trade will have to give serious consideration to the implications for them of the present extensive imports into the U.S.A. of up-to-date Power Flat Bar machines. We fear that there is bound to be some reduction in the market for British-made Hand Flat Bar goods in America; the extent of this reduction must depend largely on the success of the Flat Bar manufacturers in reducing production costs and maintaining quality of output.

C. PRODUCTION ON COTTONS PATENT MACHINES

Introduction: This section of the hosiery trade, which in normal times employs approximately 7,500 operatives, makes high quality fully fashioned underwear and outerwear on the Cottons Patent knitting frame. About two-thirds of the industry is located in the Midlands, the remainder being concentrated almost entirely in Hawick where it forms the major portion of the local hosiery industry.

Consumption target: It is difficult to suggest a target figure for the Cottons Patent section, firstly because both underwear and outerwear are involved, and secondly because the garments compete to some extent with those produced by Flat Bar machinery in outerwear and Circular machinery in both outwear and underwear. After careful consideration and bearing in mind that fully fashioned garments are more highly priced than most other types of underwear and outerwear we think it probable that long term demand will be slightly larger than before the war. This increase may be of the order of 5% to 10% by volume. It is not likely to be any greater in the normal course of development, unless wider export connections can be established in the next few years while conditions are favourable.

Raw Materials: It is to be hoped that there will be an early return to at least pre-war standards in the quality of yarns for this section. Proposals are made in Chapter IV for consultation between hosiery manufacturers and yarn spinners and we are of the opinion that the Cottons Patent section will benefit considerably from such an arrangement.

Buildings: While, generally speaking, the buildings in this section of the industry are adequate in size there is scope for considerable improvement in general arrangement. Many of the buildings were erected either for a different purpose or else for a smaller plant than that which they now house with the result that knitting spaces are in many cases cramped and may even have differing floor levels leading to congestion in the movement of materials. Large open

spaces are preferable for Cottons Patent frames, and where reorganisation is undertaken the rearrangement of machines in one big knitting space on the ground floor (unless the building is of rigid construction) should be aimed at.

The present trend in machinery is to replace the 6 division machines, which are the most common type, by the new 8 division high-speed machines. This will mean that knitting spaces will have fewer but longer machines than in the past and in any rebuilding plans due allowance should be made for this tendency. The additional length of the machine will require a somewhat increased mobility on the part of the operative who will therefore need adequate room for movement.

One special problem of this section of the trade is the considerable noise made by the machines. While it is to be hoped that the machine builders will endeavour to make them as silent as possible, some reduction of the overall noise of a knitting space can be secured by lining walls (and, where suitable, ceilings) with sound-absorbent materials.

Labour : No accurate statistics of the numbers of operatives in the Cottons Patent section are available, but the pre-war labour force was approximately 7,500 operatives. As in other sections, the majority are women, the proportions being 2 women to 1 man. The detailed division of operatives between the various operations is approximately as follows :—

Knitting	7 men
Barfilling (where done separately)	3 women or boy apprentices
Linking	3 women
Seaming	2 women
Making-up and hand finishing ...	18 women
Finishing, Warehousing, Despatch, etc.	6 men

During the war manufacturers appear to have learnt many productive economies, and as a result of this experience, reinforced by the proposals made elsewhere to achieve longer runs and greater continuity of production than was attained before the war (see Chapter IX), it appears likely that a labour force of pre-war size will be able to produce more garments than hitherto. A further factor leading to increased output will be the introduction of high-speed machinery. This increased output per operative will be more than sufficient to meet the anticipated small increase in demand so that there will be no need to increase the number of operatives in this section beyond the pre-war level.

This does not, however, mean that there are no labour difficulties facing the Cottons Patent section. There is a great danger that the anticipated expansion of *the fine gauge fully fashioned stocking section* may seriously deplete the numbers of Cottons Patent knitters since the fine gauge stocking section will need to recruit upwards of 3,000 knitters in the next five years. Because the machines are not very different in the two sections, and in view of the disparity in earnings between these sections (the average fine gauge stocking knitter earns considerably more than the average Cottons Patent knitter, though the fine gauge stocking work is more highly skilled and requires greater agility) a substantial exodus of knitters from the Cottons Patent section may take place. The particular qualities required for fine gauge stocking work are such as to attract the younger men and the probable effect on the Cottons Patent section would be that knitters who would remain would be the young apprentices and the older men. As the more efficient young trainees would tend to transfer to fine gauge stocking

knitting as soon as they become proficient, labour costs of Cottons Patent garments would rise sharply thus increasing their price and rendering them less saleable in comparison with Flat Bar or Circular knitted garments.

It will be necessary for the Cottons Patent garment manufacturers to make arrangements for an adequate intake of new workers. (Reference to the steps which we consider should be taken by the fine gauge stocking section to recruit their new workers will be found in Chapter X). One of the factors which has restricted the entry of apprentices to the Cottons Patent section in the past has been the apprenticeship terms in certain areas. These have often been of 3 to 4 years duration, and not until the end of that time have the apprentices gone on to piece work rates. This has meant that industries having a shorter period of time rate pay during training have been more attractive to school-leavers as their earnings are higher at an earlier age. This problem is one which might well be considered by Employers' Organisations and Trade Unions in areas where difficulty has been experienced in recruiting school-leavers.

We would draw attention to the anticipated permanent shortage of women workers in the established hosiery centres, and would urge that considerable attention be paid by all manufacturers to the most efficient employment of all women workers on ancillary processes.

Machinery : There are 1,205 fully fashioned garment machines of Cottons Patent type in Great Britain. The bulk of the machines (67%) are of 6 division type, though 17% are of 8 division type.

TABLE 16

NUMBERS OF COTTONS PATENT MACHINES AT OCTOBER 1942 BY GAUGE

GAUGE	NUMBER OF MACHINES
6—11	22
12—19	303
20	119
21	283
22, 24	183
26, 28	85
30	153
32—34	57
	1,205

TABLE 17

NUMBERS OF COTTONS PATENT MACHINES AT OCTOBER 1942 BY DIVISIONS

DIVISIONS	NUMBER OF MACHINES
1—3	29
4	113
5	20
6	813
7	5
8	207
9—10	18
	1,205

We consider that there is sufficient machinery already installed to meet future requirements, bearing in mind that as machinery was not fully utilised before the war there is some surplus capacity. It is estimated that machinery was fully occupied for about 5/6ths of the year. In view of the modest increase in demand forecasted earlier no additional plant should be needed. On the other hand much of the existing machinery is nearing obsolescence. The new high-speed 8 division machine knits at 45-48 courses a minute whereas the older

type machine knits only 30-32 courses a minute. It seems to us that if the industry is to remain competitive re-equipment with the higher speed machine is necessary.

This re-equipment does not, however, necessitate new machinery all through. Existing machines can be converted to the higher speed of knitting without much difficulty. On a purely arithmetical basis a 6 division machine when converted will have a machine output while knitting 50% higher than that of an unconverted machine, while the new high-speed 8 division machine will have a machine output while knitting of double that of the 6 division 30 course a minute machine. These output figures cannot, of course, be achieved in practice because they take no account of changing time, stoppages, etc. Obviously, however, there is likely to be a considerable increase in output after conversion. It seems likely that by the time re-equipment is completed there will be a slight surplus of machines and for this reason we recommend that only those machines which are in good running order should be converted.

While conversion can be undertaken in their own works by the larger hosiery manufacturers who have several mechanics in their employ many of the smaller firms will not have the necessary facilities, and accordingly we recommend that such assistance as is practicable should be given to the machine builders to expand their conversion capacity.

While we attach considerable importance to the conversion of existing plant to high-speed working we do not in any way wish to suggest that manufacturers should not replace worn out machinery. Indeed, where machines need extensive repair or renewal it will usually be more profitable to replace them. We hope the pre-war trend towards replacement of 6 division machines by 8 division machines will continue at an accelerating rate until most of the machinery is of this type. Not only is the 8 division machine faster but the additional 2 divisions give a higher output per machine and in cases where one machine is worked by one operative the output per operative would also be higher. In view of the possible shortage of knitters this will be important.

Production Questions: It is usual on Cottons Patent garments for one operative to tend one machine with the difference in certain areas that the frameworkers fill their own bars (or run on) while in other areas women or apprentices are employed specially to do this work.

It seems that, while it is generally considered in the trade that for one man to operate one machine is the most efficient arrangement, this is due more to traditional practice, formalised in some areas by trade union agreements, than to technical reasons. It is the practice in some plants for one man to operate two machines of 6 divisions without assistance, and these factories have found this arrangement satisfactory. While it seems probable that some loss of machine output would result from this system of operation there would be a greater output per man. In the future it is essential that efforts be directed to maximising man output. We understand that there are other differences in methods of underwear production between various areas where fully fashioned garment production is carried on, and that these differences, with those mentioned later, lead to considerable differences in output amounting to as much as 17% in certain lines. We feel that these questions require thorough investigation by technical experts in order to ascertain the most efficient methods with a view to raising the general level of efficiency of the industry as a whole.

We understand that the difference in practice in various areas over bar filling is due in some cases to the greater intricacy of the work and in others to reluctance on the part of the operatives (with the support in some cases of the trade union) to abandon traditional practice. On simpler types of garments, at least, there appears to be no technical objection to operatives filling their own bars. The operative could only fill his own bars if he were running one frame. If he had to run two frames he would need the assistance of a barfiller.

We believe that there may be some scope for breaking down certain making-up processes, thus enabling less skilled operatives to be employed on jobs which were formerly done by highly trained and skilled workers. Once more we must draw attention to the need to make the utmost use of all skilled labour, and if any processes can be isolated and be performed by less skilled workers this should be done. We recommend that the Hosiery and Knitwear Council should arrange for the carrying out of investigations into this matter, and also into the questions referred to in the two preceding paragraphs, with a view to clarifying the position for the benefit of the industry.

It has been suggested to us that in Scotland, because of disproportionate piece-work rates (or statements) brought about largely by the lack of a systematic method of job rating, it has been necessary in the past to give a certain number of well paid and a certain number of less well paid jobs to each operative to secure reasonable equality of earnings in a department. This has meant that each operative has to do different types of work during the week, leading to constant changes in threads, trimmings, etc., which, in addition to causing loss of output, result in an unnecessarily high percentage of errors due to the operative having to memorise more varied operations than can be properly assimilated. If rates were fixed in accordance with modern methods of job rating and having regard to the need for securing reasonable parity of earnings as between one operation and another, we believe a substantial increase in output would result.

Fully fashioned garments being of high quality tend to be sold in small quantities and to specialist distributors. Many manufacturers sold much of their output direct to the retail trade before the war. The excessive influence of the distributive trades over hosiery manufacturers (more fully dealt with in Chapter IX) led to numerous small orders for different style garments and long runs were rare. We have been told that it was not unusual for a machine, the capacity of which was 16 or 17 dozen garments a week, regularly to produce not more than 10 or 11 dozen due to the loss of running time involved in constant style changes. This raised prices and caused serious interruption of the flow of production, and we sincerely hope that these conditions will not recur.

CONCLUSIONS AND RECOMMENDATIONS—PART C

(*a*) We consider that the Cottons Patent section may have some difficulty in obtaining adequate numbers of knitters, and we recommend that existing training and apprenticeship arrangements be examined with a view to maximising efficiency.

(*b*) We recommend that slow speed (30 course a minute) machines be converted to high speed (45 course a minute) working as soon as possible, and that for this purpose any practicable assistance which can be given by the Board of Trade to the machine builders to expand their conversion capacity should be forthcoming without delay.

(*c*) We recommend that the Hosiery and Knitwear Council make a technical investigation into various matters affecting efficiency including :—

1. Comparison of the output of an operative running one machine with that of an operative running two machines.

2. Differences in output according to whether separate barfillers are employed or not.

3. Differences in production methods which lead to differences in output.

4. Making-up processes with a view to further breaking down of operations so that less skilled workers can be employed than at present. In any such examination the influence of piecework rates should not be overlooked.

Any conclusions reached as a result of these investigations should be made widely available to the industry.

D. PRODUCTION ON CIRCULAR MACHINES (OTHER THAN FOOTWEAR)

Introduction : Under the above heading we include all types of knitted goods (excluding footwear) made up by cutting and seaming fabric which is knitted in cylindrical form on circular knitting machines. The circular machinery falls into four main groups, viz., interlock, circular rib, plain circular, and circular terrot machines.

Interlock Machinery : During the war years 70% of the cotton goods manufactured by the industry have been made on interlock machinery. The fabric is knitted in varying widths to suit the particular garment and, being tubular in construction, requires only a minimum of machining in the making-up process. With interlock, as with most other circular machinery, the manufacturer should have a full range of diameters suitable to the garments in order to avoid loop distortion, cutting waste and unnecessary seaming. Some manufacturers have not the range of diameters suitable to their trade.

There are a number of interlock fabric producers, who service the trade with fabric in the same manner as the weavers supply the requirements of the made-up garment trade. Large general manufacturers with small interlock knitting plants have frequently abandoned the manufacture of the fabric as it is usually cheaper to buy from the fabric producers than to knit it on a small scale.

It is interesting to note that the use of interlock machinery on a small scale is unusual due to the fact that the goods are ideally suited to mass production, where the economies of bulk runs have made it impossible for any but the fairly large-scale manufacturer to survive the fierce price competition which developed in the inter-war years. This competition was due in part to slump conditions both at home and abroad, which led to general uncertainty, subsidised imports of very low-priced goods, attacks on prices by distributors, and reductions in wage rates. It was due also to a tendency for manufacturers with a mixed plant to allocate their oncost disproportionately, resulting in an uneconomical price level with which others had to compete. Lack of uniformity in wage rate fixing throughout the industry did not help matters.

An unfortunate feature of the pre-war price competition in the interlock trade was the tendency to meet the price demand by a debasement of the fabric.

The machines can be adjusted to knit anything from a stout almost indestructible fabric down to a spongy loose fabric. It is a section admirably suited to quality control by cloth specification and a minimum standard should definitely be fixed. It is recommended that some minimum specifications, similar to those in the Utility Schedule, should be laid down by agreement of the trade.

This machinery and the fabric were patented, and three manufacturers only were licensees until about 17 years ago. When the patent expired growth of this section was tremendous, and consequently, being a comparatively modern development, the machinery is also fairly modern.

The newest interlock machinery is equipped with electric stop motions, and we consider that much of the existing plant could and should be so adapted. Other variations have been in the direction of 12 to 16 feeder machines (on the basis of a 16 in. diameter cylinder) in place of the old 8 feeder type, and although some of the 10-12 year old machinery is slower because of the lesser number of feeders, the section is quite healthy in the efficiency of its knitting machinery. The modern trend to exaggerate the number of feeders is deprecated as tending to cause loop distortion and producing a fabric of spiral character. The speed and number of feeders must be adjusted to secure perfect loop formation. It is suggested that there are far too many 8 feeder and too few 16 feeder machines of comparable diameter. Single motor drive assists mobility of machines, gives a more positive drive and contributes to safety.

There are 3,077 interlock machines in the possession of manufacturers, mainly of 20 needles per inch in diameters 10 in. to 27 in. Of these 1,923 were in production in January 1943 and 1,154 were closed down. A certain amount of reconditioning is necessary and will be a call upon machinery builders' capacity. As there has been very little robbing of standing machines to obtain parts for running machines, there seems to be no reason why stored machinery should not be put back into operation very quickly. The productive performance of high-speed machines is 50% to 60% higher than that of the old slow-speed machines. In its latest developments incorporating from 12 to 16 feeders, the high-speed machine gives an additional increase in productive performance

The factors leading to economy of production in the interlock section can be summed up in the phrase " continuity of production," which would arise from bulk orders, double dayshift working, layout and planning. Specialists on certain types of production, planning of production and management by well trained and experienced people are all necessary.

Although most of the fabric made on interlock machines is of cotton, some excellent examples of fine wool fabrics were made before the war, and experiments should be promoted by the Hosiery Research Council in the use of wool on these machines. With the necessary research into anti-shrink and anti-felting processes, these fabrics might have a wide sale, and as Britain has great preponderance in this machinery, the export field should open up on a large scale.

Circular rib machinery : This machinery is used extensively for both underwear and outerwear—much of it is interchangeable. The needles per inch vary from 5 to 18 and the diameters from 5 in. to 26 in. It is not used to any great extent for men's underwear. Development in fancy stitch formation and of the waist shaping capabilities of this type of machinery was very rapid during the five years before the war, so that the products of these machines made considerable headway in women's and children's underwear at the expense of production

from plain circular machines. The machines use wool very satisfactorily and produce excellent fabrics, giving great multiplicity of design. The fabric is cut and made into garments and again, because its construction is tubular, very little side seaming is involved. The newer machines knit welt and body, and the latest developments with the transfer stitch and jacquard attachments are capable of producing goods of very high standard, provided the designing and making-up processes, which have generally been of a rather low standard in the past, are upgraded to be worthy of the fabric.

Much of the circular rib machinery is fairly modern and in good condition but, because development has progressed so rapidly, manufacturers have tended to accumulate a number of each type from year to year with the unsatisfactory result that plants are often made up of a large number of varying types of machines. As already stated, the newer machines are capable of producing goods of a very high standard and which are worthy of a better standard of designing and making-up than has often obtained in the past. We consider that it would be worthwhile to set up a special panel for the examination of this subject and suggest that the National Hosiery Manufacturers' Federation might sponsor such an arrangement. Exports are small in this section, due to inappropriate styling. Given improved standards, a new field for exported outerwear could be developed.

We also consider that machine builders should be asked to co-operate with the home industry by giving preference in the supply of the new improved machines to British manufacturers producing for export.

The following is a survey of this group of machines at the 1st January, 1943.

TABLE 18

CIRCULAR RIB MACHINERY IN GREAT BRITAIN IN JANUARY 1943 BY GAUGE

(*Source*:—Board of Trade.)

TYPE OF MACHINE (NEEDLES PER INCH)	NUMBER OF MACHINES IN PRODUCTION	*NUMBER OF MACHINES CLOSED UNDER CONCENTRATION	TOTAL NUMBER OF MACHINES
5	235	232	467
6	413	761	1,174
7—9	542	620	1,162
10	557	857	1,414
11	87	131	218
12	379	593	972
13—18	187	527	714
TOTAL ...	2,400	3,721	6,121

* A certain number of these machines will be running again now.

The reason for the heavy closure proportion is that outerwear was concentrated by 60%.

TABLE 19

CIRCULAR RIB MACHINERY IN GREAT BRITAIN IN JANUARY 1943 BY CYLINDER DIAMETER

(*Source* :—Board of Trade.)

SIZE OF CYLINDER	NUMBER OF MACHINES	SIZE OF CYLINDER	NUMBER OF MACHINES
inches		inches	
5—8	463	14—15	873
9—11	987	16	1,016
12	695	17—18	446
13	979	19—20	464
		21—26	198
	TOTAL ALL MACHINES ...		6,121

Generally speaking any machinery in the above tables with fewer than 10 needles per inch is of the older type with limited capacity for fancy stitch formation, and this machinery will usually be 20 years old or more.

Plain Circular Machinery : Fully 50% of the plain circular machinery is completely redundant, although much of it was resurrected for Ministry of Supply work during the war years. The following is a survey of the machinery in January, 1943 :—

TABLE 20

PLAIN CIRCULAR MACHINERY IN GREAT BRITAIN IN JANUARY 1943 BY GAUGE

(*Source* :—Board of Trade.)

TYPE OF MACHINES (NEEDLES PER INCH)	NUMBER OF MACHINES IN PRODUCTION	* MACHINES CLOSED UNDER CONCENTRATION	TOTAL NUMBER OF MACHINES
5—9	402	448	850
10	190	180	370
11	293	181	474
12	620	610	1,230
13—15	133	223	356
16	391	445	836
17	12	13	25
18	351	193	544
19—27	121	158	279
28	165	137	302
30	—	48	48
TOTAL ...	2,678	2,636	5,314

* A certain number of these machines will be running again now.

The plain circular machinery is of an assortment of types, needles per inch varying from 5 to 30 and diameters from 9 in. to 28 in. The fabrics produced are mainly used for underwear made of wool or wool yarns plated (i.e. backed) with cotton. The coarser grades are used for low grade (condenser) cotton fabric for cheap underwear. In the last ten years, however, the development of the interlock section in men's, women's and children's clothing, changes of fashion and the new types of fancy ribbed machines for women's underwear, have outmoded much of the production of plain circular machines, and there is not much indication of a revival of demand. In consequence, manufacturers

have usually replaced many of their plain circular machines by circular rib machinery, though there is still a wide field for the products of the plain circular machine so far as men's wear, children's underwear and women's outerwear are concerned.

Circular Terrot Type Machinery : This machinery is used almost exclusively in the production of fabrics for women's outerwear, particularly dresses and suits, and for speciality underwear of the better class type. Large numbers of these machines are owned by fabric knitters who supply other hosiery manufacturers and the making-up trade.

There are 2,685 machines of various diameters and gauges in possession of British manufacturers. Most of these machines are reasonably efficient and there is ample capacity for the production of all the fabric which is likely to be needed. Unfortunately this type of machine has never been constructed in this country and replacements are very difficult to obtain.

The development of knitted wool fabrics for outerwear has become highly specialised and there is a wide field for further development. Production of the fabric calls for a full knowledge of yarns and ingenuity in finishing processes, a flair for colouring, and scientific management. It has been suggested to us that at least 80% of future demands will be for plain fabrics. Essential factors in successful production are good colours, control of yarn and fabric stocks, maintenance of standards of shrinkability and relaxation, maintenance of standard widths, and constant consultation between manufacturers, makers-up and distributors to smooth out seasonal fluctuations.

Much experimenting has been and must still be done in connection with printing of knitted wool fabrics, as wool does not stand up to the printing processes and chemicals used in the same way as do cotton and rayon.

A growing export trade of jersey fabric made on terrot type machines is being built up.

The fabric, which is made up by high standard manufacturers, has a good conversion value, 6s. worth of greasy wool yielding $20 in the American market. The couturier makers-up use large quantities of these fabrics for women's high-class outerwear, much of which is exported. In many foreign markets knitted goods have a tariff advantage over woven goods. Pre-war, the Viennese used this to further their exports of high-class knitted outerwear, and the couturier makers-up are hoping to secure a good share of this trade. There is a great future for knitted wool fabrics for outerwear, having in mind their considerable advantages of serviceability, warmth, comfort, design and colour.

Consumption Target : It is difficult to estimate a figure for the post-war volume of production in these sections of the industry, particularly as no pre-war production figures are available. We are of opinion, however, that there are opportunities for considerable expansion over the pre-war level of business in most of the products in this group—particularly for men's and women's outerwear and outerwear fabrics. The opportunities offered by foreign markets need to be studied with great care, especially in relation to colour, size variation, design, style and quality of making-up ; but, granted this, a much greater volume of exports should be possible than was the case pre-war. Raising of the standard of styling is particularly necessary in circular rib products. Manufacturers would do well to obtain first-hand information by visiting the countries con-

cerned. Export possibilities in men's, women's and children's underwear need to be explored.

Raw Materials : Before the war the quality and delivery of yarn supplies were very satisfactory. We believe, however, that much advantage would be gained by centralisation of demand on a limited range of counts of cotton yarns. Greater stability of raw material prices would also be of advantage. The manufacturer, in order to be ready for large seasonal deliveries, had often to finance production for considerable periods. We are of the opinion that consultation on a national basis between the hosiery industry and the yarn producers is desirable. This matter is dealt with generally in Chapter IV.

Buildings : It is generally agreed that single-storey buildings are more suitable to this section of the industry as there is less vibration and therefore less needle breakage and resultant waste. This type of building also affords better lighting facilities and layout planning.

Labour : Apart from knitting, the labour employed is predominantly female, but in various operations the proportion of male and female labour varies considerably according to the type of product. It has been found extremely difficult to replace women by men in those operations which are traditionally female. It has not always been so difficult to replace men by women. The number of machines per operative is determined by trade practice and agreement. There is scope for enquiry into the possibilities of team work and division of operations in making-up with the aid of single-motored machines. There is also scope for investigation of operations by motion study experts and for use of their findings in revising layouts and training systems.

Production Questions : In the production of garments by manufacturers using circular machines, as much as 70% of the hours worked are spent in the making-up processes, the workers being mainly women. In view of the anticipated continuing shortage of women workers, it is particularly in this section of the industry that efforts must be made to gain the full advantage of mechanisation.

The three problems for examination are—

(*a*) The superior speed of stitching of the latest types of sewing machines, particularly the use of multiple needle machines when appropriate.

(*b*) Improvements in methods of use of labour, e.g. team work.

(*c*) The fact that the operating time of the stitching machines used in making-up is seldom more than 40% of maximum.

General : In the past manufacturers using circular machinery have not competed effectively in the outerwear field with manufacturers using flat bar machinery as the latter, though handicapped by the slower speed of their machinery, have been more successful in promoting the sale of their outerwear by fashion appeal. New jacquard developments on circular machines may cancel some of the advantages of flat bar machine producers. In our opinion the circular machinery users have suffered unnecessarily from the poor standard of making-up which was often used for circular outerwear. It is likely that use of a better standard of making-up on fabric produced on the latest types of circular machines will promote the expansion of circular outerwear into the market which has hitherto been held by flat bar outerwear.

(*a*) There is scope for considerable expansion in the market for good-class circular knitted outerwear and outerwear fabric, contingent on good design and a high standard of making-up. Export prospects for high standard flow produced circular knitted garments designed to suit the various overseas markets are particularly bright. Overseas market research, including personal visits by manufacturers, is recommended.

(*b*) Centralisation of demand on a limited range of counts of cotton yarns and greater stability in yarn prices would be most desirable.

(*c*) We recommend that the Hosiery and Knitwear Council should arrange with the industry for the drawing up of minimum specifications for interlock garments where appropriate.

(*d*) Replacement of many of the existing sewing machines by the latest types of high-speed sewing machines, particularly multiple needle machines, where appropriate, is desirable.

E. KNITTED GLOVES (EXCLUDING GLOVES MADE FROM WARP KNITTED FABRIC)

Consumption Target : It is very difficult to form a reliable estimate of the future consumption target for this section of the industry owing mainly to the following :—

(*a*) Lack of information about the availability of gloves from abroad and the future import policy for these goods.

(*b*) Fluctuation in fashion and the consumer tendency towards other classes of goods.

(*c*) The extent to which the expansion of glove exports will be possible.

The following table illustrates the position in the years before the war :—

TABLE 21

PRODUCTION, EXPORTS AND IMPORTS OF KNITTED GLOVES

YEAR	UNITED KINGDOM PRODUCTION		EXPORTS		EXPORTS AS % OF PROD.	RETAINED IMPORTS		IMPORTS AS % OF PROD.	TOTAL UNITED KINGDOM CONSUMPTION
	Total value £	Average value per doz. £	Total value £	Average value per doz. £		Total value £	Average value per doz. £	£	£
1930	290,000	0·68	104,000	0·76	36%	133,000	0·48	46%	319,000
1935	297,000	0·51	102,000	0·64	34%	89,000	0·29	30%	284,000
1937	347,000	0·57	83,000	0·70	24%	119,000	0·33	34%	383,000

As this table indicates, the knitted glove industry forms a very small part of the hosiery industry, and while it exported a substantial part of its output in the higher priced lines, it suffered from competition from cheap imported goods.

Raw Materials : Once the present yarn shortages, common to all sections of the hosiery industry, disappear, the manufacturers in this section do not anticipate any difficulty in obtaining satisfactory yarns of all types. As with the other sections of the industry, there is no joint machinery for the discussion of common problems between the knitted glove producers and the spinning industry. So far as we have been able to ascertain, the glove producers would not be greatly interested in such arrangements. In view of the nature and size of this section of the hosiery industry and its general satisfaction with pre-war yarn supplies we do not regard the matter as one meriting early attention.

Buildings : The machines used by this section of the industry are comparatively light and no difficulty arises from excessive vibration causing needle and yarn breakages. There is no particular advantage to be derived from single-storey buildings as compared with multi-storey buildings, though in either case it is important that the rooms should be large enough to permit proper layout of the plant with a reasonable flow of production and should be well ventilated and more particularly well lit. We do not anticipate that any appreciable amount of new building work will be called for by glove producers, though we have no reason to suppose that this section of the industry is in any way notable for suitability of its buildings.

Labour : The proportion of women and girls employed on glove production is very high, most of them being engaged on knitting the glove fingers on hand-operated narrow width Flat Bar machines. This is a process needing close attention, good eyesight and nimble fingers, and girls of not more than 16 years of age are regarded as the best type of trainees. We understand that attempts to train male labour for this work have been unsuccessful. The speed of production is governed by the dexterity of the operator who has to " run-on " each glove finger and thumb. In consequence, labour costs represent a high proportion of the cost of the finished gloves.

The hands and cuffs of the gloves are knitted on Circular power machines, three or four of which are supervised by one operative. Trainees are taught by suitable experienced operatives in the factory, and opinions vary as to the length of time needed for training. We understand that variations in the public demand for particular gauges have to be met by transferring operatives to work on machines of the appropriate gauges. This will obviously increase the length of time which trainees need to reach the necessary level of efficiency, and we doubt whether a period of three to six months training which, according to one suggestion, is sufficient, would be adequate.

The method of training adopted does not seem to be in accordance with modern practice, and in our view there is scope for improvement. Most of the glove manufacturing firms are not sufficiently large to justify the running of up-to-date training schools in individual factories. We think that the question of co-operative arrangements for the operation of suitably located training schools each serving a number of factories is worth consideration, and commend it to the attention of the manufacturers.

Owing to the trying nature of the work, glove manufacturers may, in a period of labour shortage, experience difficulty in obtaining a sufficient number of workers, particularly juveniles, unless local conditions are favourable. Glove production can, however, be carried on by extremely small units so that small

plants can be located where there are pockets of labour, without much difficulty. So far as we can find, few welfare facilities are provided in glove factories, and there is room for improvement particularly in respect of the provision of rest rooms and lighting and interior decoration.

Machinery : There has been very little change for many years in the small hand operated Flat Bar machines used for glove fingering. The manufacturers appear to be quite satisfied with the present machines which are said to have a very long life. It has been suggested by a number of Scottish manufacturers who were co-opted to assist in our enquiries that any conversions of the present machines are best left to the manufacturers themselves to suit their individual requirements. We are not aware that any developments of importance have occurred as a result of such conversions. This view is, however, in agreement with the normal practice in this section of buying second-hand machinery from other sections, reconditioning it and adapting it for use.

While little change has taken place for many years in the hand machines, the most modern of the Circular power machines in the possession of glove manufacturers are about one-third faster and more productive than the older types. We see no reason to anticipate any considerable expansion in the machine capacity of the glove industry. If it is possible, as we hope, to even out to some extent the seasonal fluctuations in ordering which took place pre-war the machine capacity will be more than ample. It does, however, seem that there may be considerable scope for modernisation of the existing plant. We have not been able to give detailed attention to this question and further enquiry seems necessary. We understand that for example a well-known Swiss firm has under construction a hand machine for the making of jacquard and fancy stitch gloves, and it is hoped that full particulars with samples may be available during the present year. These machines may be very useful in helping the glove producers to retain and expand their export connections, and we commend this question to their attention. We recommend that interested firms should be allowed to import prototype machines for trial as soon as possible, and that if the machines prove satisfactory, their importation at least for production for export should be encouraged.

Production Questions : Six or seven hand-operated Flat Bar machines are generally needed to produce the glove fingers for the cuff and hand parts produced on one Circular power machine. Generally speaking, the larger firms are mainly engaged in the production of low and medium-priced gloves, the small firms concentrating more on the high-priced articles and having in consequence a much lower output per worker. There is little or no " making-up " by seaming or linking in glove production as is the case in other sections. The gloves are complete articles when they come from the Hand Flat Bar machines with the fingers knitted on and are then subjected to the treatment described as " finishing," for which various types of Milling machines, Hydro-Extractors, Brushing machines and Steam Presses are used.

The speciality types, which represent a small proportion of the total knitted glove production, are sometimes sold direct to retail stores, but apart from this the gloves are normally sold to wholesalers, Co-operative Societies and Local Authorities. Many manufacturers have complained of difficulties caused by the failure of their customers to place their orders for the season's goods (particularly

for " fancy " lines) early enough to permit production in good time. Even for more or less standard lines where bulk orders were placed, manufacturers were often asked to hold the goods ordered in stock until required. Conditions of this kind make it impossible to plan production satisfactorily, and we have discussed problems of this kind which concern the influence of distribution arrangements on efficiency in Chapter IX. We find that there is a general opinion among manufacturers that the maintenance of existing rates of wages is likely to be dependent on the severity of the competition from imported gloves made in countries where wages are lower.

We have commented in Chapter IX on the general question of imports, and we would only suggest here that glove manufacturers should put themselves in a position to show the Government that they have taken or are taking all possible steps to reach the highest level of efficiency if asking for protection against vicious types of competition from imported goods.

CONCLUSIONS AND RECOMMENDATIONS—PART E

(*a*) The method of training adopted in the glove industry does not seem to be in accordance with the best modern practice, and in view of the small size of most of the firms involved, we recommend that the manufacturers should consider the practicability of co-operative arrangements.

(*b*) There seems to be considerable scope for modernisation of the machinery in this section. A new Hand Flat Bar machine which a Swiss firm is understood to be developing may be useful, particularly in helping the industry to expand its exports. We suggest that the glove manufacturers should enquire into this possibility, and we hope that importation of these and similar machines will be allowed if they promise success in this field.

(*c*) We note that the knitted glove manufacturers were handicapped pre-war in planning production by seasonal buying and by the failure of their customers to place orders for the season's goods in good time.

F. DYEING AND FINISHING

Scope of the Inquiry : We have examined the dyeing and finishing industry only in so far as it affects hosiery production. We have not attempted to consider in detail technical matters affecting efficiency, though technical points are mentioned where necessary for clarity. In the main we have concerned ourselves with the ways in which action can be taken to reduce dyeing and finishing costs by or with the co-operation of the hosiery industry.

Dyeing and finishing of hosiery is carried on in two ways :

(*a*) By hosiery manufacturers who have their own plants for this purpose.

(*b*) By commission dyers and finishers.

Some of the larger hosiery manufacturers, particularly in the women's stocking trade, do their own dyeing and finishing, while the smaller firms usually send their goods for treatment to commission dyers and finishers. The proportion of stockings and socks done by each method is shown in the next table.

TABLE 22

PERCENTAGE OF STOCKINGS AND SOCKS DYED AND FINISHED BY HOSIERY MANUFACTURERS COMPARED WITH THE PERCENTAGE PROCESSED BY COMMISSION DYERS AND FINISHERS

(Derived from Census of Production and Import Duties Act Inquiry 1937.)

	1930	1935	1937
Dyed and finished by manufacturer ...	23%	25%	26·5%
Processed by commission dyers and finishers	77%	75%	73·5%

The slight increase in the proportion dyed by manufacturers between 1930 and 1937 is due mainly to a decline in the proportion of women's silk stockings dyed by commission dyers from 73% to 65%, and of women's rayon stockings from 76% to 70%.

Stockings and Socks : Table 23 shows value of work done in 1937 by the textile finishing trade in treating stockings and socks, this value being expressed as a percentage of the net selling value of those products.

TABLE 23

APPROXIMATE PERCENTAGE COST OF COMMISSION DYEING AND FINISHING OF STOCKINGS AND SOCKS

(Derived from Import Duties Act Inquiry 1937.)

TYPE OF PRODUCT	AMOUNT TREATED BY COMMISSION DYERS AND FINISHERS (thousand dozen pairs)	VALUE OF WORK DONE IN TREATMENT £000's	AVERAGE VALUE OF WORK DONE PER DOZEN PAIRS £	MANUFACTURERS' AVERAGE SELLING PRICE OF ALL STOCKINGS AND SOCKS PER DOZEN PAIRS* £	COST OF TREATMENT AS % OF VALUE (APPROXIMATE) †
Cotton and Wool	14,524	553	0·038	0·455	8·3%
Silk ...	4,091	383	0·094	0·875	10·7%
Rayon ...	7,802	352	0·045	0·398	11·3%

* The manufacturers' average selling price is the average value for all the output of stockings and socks of each type including those processed by the manufacturer.

† The percentages can only be taken as rough averages but they give some idea of the cost of dyeing and finishing treatment by commission dyers and finishers in relation to the net selling value of stockings and socks.

Size of Orders : It is clear from our enquiries that costs of dyeing and finishing are influenced considerably by the size of orders and by seasonal fluctuations in business. During the war, dyers and finishers have had the benefit of bulk orders and continuous flow, and have turned out twice as many socks and stockings per operative as were dealt with before the war. The average weight per dye used pre-war was 45 lbs., while at present it is 150 lbs. This improvement is due to the restricted range of war-time shades which has ensured large dyeing orders, and also to the absence of seasonal fluctuations. It is not therefore surprising that we found dyers and finishers were almost unanimous in holding the view that measures designed to preserve the high war-time average are desirable in the interests of efficiency.

We have found an almost unanimous opinion among distributors, hosiery manufacturers and dyers and finishers that the pre-war shade range was too wide. Most of the firms with whom the position has been discussed agreed that the range for women's stockings should, in future, be confined to nine or ten colours including black and gunmetal. It is desirable therefore for hosiery manufacturers to reach agreement on a limited range of shades to which all would work, and we commend this to the attention of the Hosiery and Knitwear Council.

We would draw attention to the work of the Hosiery Fuel Efficiency Committee (see Appendix D) representing the dyeing and finishing and the manufacturing side of the industry who in conjunction with the Board of Trade, the British Colour Council and distributors, continue to regulate machine loads and limitation of shades. In our opinion the same or some similar organisation should continue to operate not only to achieve greater economy in the industry, but to further the national need to conserve fuel.

The efficiency and cost of dyeing and finishing is affected by seasonal buying. This led before the war to many commission dyers and finishers having little work in the early months of each year, and having to work overtime at other periods. This position caused increased costs and waste of fuel, and in addition had unfortunate repercussions on the workers in this industry. Seasonal demands for hosiery products have also led to late buying from hosiery manufacturers, with requests for early deliveries and consequent pressure on dyers and finishers. In addition, where orders were placed early, they were often made small in order to avoid the risk of dead stock, and were subsequently followed by further small orders for the same goods.

The cost of dyeing increases sharply as the size of the dyeing order falls below the capacity of the machine, though on the other hand the saving effected by increasing the size of lots beyond 200 lbs. is relatively small. It is therefore desirable to aim at maintaining the size of orders to correspond with vat capacity.

We have given some consideration to the question of stocking manufacturers installing their own dyeing and finishing plants. Our investigations have convinced us that the services of commission dyers and finishers are essential. On the other hand, there seems to be ample scope for a manufacturer whose production is substantial to do his own dyeing and finishing, particularly because of the added advantage of controlling his production up to the despatch of the finished goods.

Most of the dyers and finishers in the Midlands are members of the Midland Hosiery Dyers' and Finishers' Federation, which has a membership of 55 firms. The Federation has a schedule of prices to which its members work and maintains excellent relations with the hosiery industry.

Shrink resisting finishes : A great deal of progress has been made during the war in applying shrink resisting processes to wool, and much good work has been done by the Wool Industries Research Association. This is a matter of great importance to the future of wool garment production, and we believe that the war-time advances will lead to the more general use of these processes. The process can be applied to the carded slivers, tops, yarns and fabrics, but we understand that the application of the process to all types of knitted fabric is not yet fully successful.

Machinery : All the dyers and finishers from whom we have taken evidence complain of the difficulty of obtaining new machinery and repair parts for their existing plant, including electric motors. Speeding up of deliveries of this equipment is necessary.

We have already mentioned in this chapter the difference between American and British practice in the boarding of women's stockings. In our opinion there is scope for the use of semi-automatic stocking boarding machinery in the United Kingdom, and we believe that the industry is beginning to appreciate the position.

General : At one time the location of dyeing and finishing plants was dependent on the availability of an adequate supply of soft water. The manufacture of water-softening equipment which is used by most dyers and finishers has very largely removed this difficulty, and the location of plants in new districts, should this prove necessary, need not be prevented by the hardness of the local water. We do not suggest that even so one district may not have an advantage over another in the quality of its water. For example, the importance of Nottingham as a centre for bleaching and scouring is due in part to the suitability of the Nottingham water.

We have made such enquiries as have been possible about the standard of dyeing and finishing in North America, and on the Continent, and all the information we have received goes to show that the standard in Britain compares favourably with that abroad.

CONCLUSIONS AND RECOMMENDATIONS—PART F

(*a*) Commission dyers and finishers provide an essential service for the hosiery industry.

(*b*) Some manufacturers having a large output of women's stockings have found it worthwhile to operate their own dyeing and finishing plants, and have found great advantage in controlling their production up to the despatch of the finished goods.

(*c*) The dyeing of small lots is wasteful and costly, and it is desirable to aim at maintaining the size of orders to correspond with vat capacity.

(*d*) Limitation of colour ranges for various types of hosiery products would do much to remove the need for the dyeing and finishing of small lots and would therefore increase the efficiency and reduce the costs of dyeing and finishing. For this purpose agreed limitation of colour ranges should be aimed at wherever practicable.

(*e*) Concerted action by hosiery manufacturers and wholesale and retail distributors to obtain continuity of production by suitable arrangements of the timing and volume of ordering is important, and consultative machinery for arranging suitable action is necessary.

(*f*) Speeding up of supplies of new machinery and repair parts to dyers and finishers is desirable, and there is scope for an increase in the average *capacity* of dyeing machines used by dyers and finishers.

G. GENERAL PRODUCTION MATTERS

In the earlier part of this chapter reference has been made frequently to production questions arising from an examination of the principal classes of

hosiery. The purpose of this Part is to bring together these various production matters and to examine them in relation to a Production Questionnaire which was circulated to over one hundred firms in the industry. Over 81% of the recipients responded, and our thanks are due to all who helped in this direction.

Pre-war position : Our investigations have shown that before the war production was made difficult in most firms owing to the constant change in design, styling or colour of the articles produced, and planning production, even a few weeks ahead, was not easy. Supervisors have informed us that it was customary, particularly in outerwear, for individual articles to be rushed through the factory at frequent intervals, leaving behind them a trail of difficulties quite out of proportion to the added cost finally charged to the " special order."

Colour multiplication reached surprisingly high proportions, and even in the women's stocking section of the industry, where quantity production methods would appear to have considerable possibilities, there were, pre-war, innumerable different shades, many firms having their own range. One firm alone had nearly 150 shades. During the war the number of stocking shades was reduced voluntarily to eight.

Another factor arising from comparative lack of long-term production planning before the war was the amount of short time worked in the industry. This problem has been stressed by many members of the Working Party and is one of great importance in considering the future of the industry. It is examined again in Chapter VII.

Wartime production lessons : About 40 per cent. of the replies to our Production Questionnaire stated that the war-time lessons would be useful in the days ahead. This figure is low when we compare it with the many personal opinions expressed by those working in the industry, particularly in the workshops, where, as was perhaps natural, we found that better production planning could be performed in war time owing to the policy of rationalization and standardization, and with large Government orders assuring continuity.

A number of replies questioned the possibility of persuading the public to accept for any long period a continuance of restriction of design, etc. which enabled productive efficiency to be raised during the war. The necessity for maximum output over the next few years will possibly settle this problem automatically for that period, but we have no doubt that greater variety will be introduced into hosiery, even if not to a pre-war stage, and the essential problem of production is how to ensure a rising production per man hour with a partial return to conditions which tend to prevent it.

Post-war plans : Nearly 70% of all firms replying stated that their post-war plans are made, but very few said that they are in a position to carry them out. The obstacles are many, but would appear to come under three main headings :

(*a*) Lack of machinery.

(*b*) Lack of labour.

(*c*) Lack of raw materials.

The lack of machinery appears to be an easy first, and we comment more fully on this important matter in Chapter V. It is hardly necessary for us to stress the importance of machinery in a section devoted to production, but in view of the repeated references earlier to the need for new and better machinery and

equipment, we would urge the Government and the machine builders to take every step which would improve the position. The labour and raw material positions are dealt with in other sections of our report.

The building position : Reference has been made in several parts of this chapter, to the need for a building programme, both to house new machines, to reorganise existing production flow lines, and to provide amenities such as canteens. Nearly 45% of all firms replying stated that their existing buildings were definitely unsuitable—a surprisingly high figure and one worthy of serious consideration. One reply stated that the factory was over 100 years old and did not lend itself to efficient reorganization !

The suitability of buildings plays such an important part in productive efficiency that we consider it most important to give every facility to those willing to build, and from our observations in many factories we find it difficult to envisage a first-class production plan being carried out unless prior building or rebuilding is accomplished. We suggest that every effort is made in such cases to provide floor areas as open as possible, free of obstructions, walls and partitions, so that the utmost flexibility of productive layout can be achieved. The modern tendency is to place more and more processes " in the production flow " and to revise layouts more frequently in line with changing products. An open floor space does much to expedite this method.

Possibilities of additional mechanization : The provision of knitting machines and ancillaries such as linkers, seamers and other sewing machines does not end the possibilities of mechanization, although it is significant that 62% of the replies stated that " no further mechanization was being considered in the factory " and 46% gave the same reply in relation to the offices. We have already commented, and do so again in Chapter V, on the importance of providing adequate ancillary machines and equipment in addition to the basic knitting machines. The delegation of the British Silk Stockings Corporation which visited the U.S.A. in 1945 commented frequently on the many aids to production which were seen—

> " For examining and grading, the expanding forms used to some extent in this country, were general, automatic counters being used to register the number of hose examined so that the operator can at a glance see when 24 hose are ready for tying up."
>
> " Foot-controlled irons were generally used, thermostatic heat control being incorporated when used on nylon. The transfers were mostly printed on continuous strip."

Our own delegation noted similar points and we have quoted a passage from their report on this point in the part of this chapter dealing with women's fully fashioned stockings.

Conveyor systems do not generally seem to be favoured by those in the industry and " batch work " is more often the rule. We have, however, been struck by the amount of " work in process " and consider that any system which would speed up the flow of work between operations is worth investigating as it is likely to provide—

(*a*) a better service to operatives,

(*b*) a better control over quality and quantity, because of more orderly movement, and

(*c*) a greater turnover of production.

Outworking : This question is primarily one coming under the heading of Labour, but it has a relationship to production and is certainly one on which the

Trade Unions speak strongly if outworking is performed in the home. From our investigations outworking has increased during the war, which is quite understandable, and on the average appears to be about 150% greater to-day. Even so, it represents only about 2.8% of all employees. Many firms state that if the present shortage of labour continues they will be forced to use outworking to a greater extent, mainly through the setting up of small units in districts where pockets of labour are available, such as the country villages. Indeed, one firm advanced the view that " one of the best ways to keep men on the land is to find work in the villages for their women-folk." During the war extensive outworking in small units was organized by the engineering industry and providing certain production principles were observed, the output per worker compared very favourably with the parent unit.

We are strongly against outworking as a permanent general policy if performed in the home of the individual worker, but if organised in the form of small units, with due regard paid to wages and conditions, outworking may be of great value in providing a balanced labour activity, and an additional source of labour.

Breakdown of Productive operations: In order to assess the relative number of workers employed on the principal factory processes a question was addressed to a cross-section of all firms and the following figures are taken from this source :

TABLE 24

BREAKDOWN OF PRODUCTIVE OPERATIONS SHOWING PROPORTION OF PRODUCTION WORKERS ENGAGED ON EACH PROCESS

END OF YEAR	WINDING	KNITTING	MAKING-UP	MENDING, BOXING, COUNTERING, ETC.	DYEING AND FINISHING *	TOTAL
1938	5%	26%	48%	17%	4%	100%
1945	5%	25%	49%	17%	4%	100%

* These figures apply only to workers employed in hosiery firms having their own dyeing and finishing departments. Commission dyers and finishers are not included.

These figures show us that only about a quarter of all production workers are employed on the basic knitting machines of the industry, and on the assumption that added productive efficiency can be obtained proportionately to the number of people engaged, then a good case could be made for a more intensive study of production methods as applied to the remaining three-quarters who work on a variety of ancillary processes. This does not by any means detract from the great importance of the main knitting operations, although they employ only about 25% of the workers. If the knitting machines are not well designed, maintained and operated, they will cause difficulties over all succeeding operations.

Breakdown of Indirect operations: A further analysis was obtained showing the relative number of workers employed on so-called non-productive jobs in the factory, such as cleaners, labourers, canteen workers, etc., the number employed on all clerical operations and the number of supervisors (the latter term including

all management and directors, if active). The following figures emerge and are taken from the same returns as Table 24 above :

TABLE 25

BREAKDOWN OF INDIRECT OPERATIONS SHOWING PROPORTION OF 'INDIRECT' WORKERS ENGAGED ON EACH TYPE OF WORK

END OF YEAR	% OF INDIRECT TOTAL TO TOTAL PEOPLE EMPLOYED	NON-PRODUCTIVE	CLERICAL	SUPER-VISORY	TOTAL INDIRECT LABOUR
1938	13%	58%	24%	18%	100%
1945	17%	59%	21%	20%	100%

A surprising similarity is shown between the comparable totals in the two years taken. The general tendency in industry to increase indirect workers has in this case obviously been largely neutralized through such factors as large Government orders, Utility Schedules, and the possibility of longer term planning.

The total percentage of indirect labour seems comparatively small in relation to other industries, and this is not necessarily a virtue. It is obviously impossible to comment on a broad basis and individual cases must be taken on their merits. We would suggest, however, that the employment of a relatively small additional number of specialists, such as production engineers and production planners, might enable savings in *total* cost to be made. Reference will be made later to this point.

We also asked for estimated requirements of additional labour over the next twelve months and the following figures (again from the same source) emerge :

TABLE 26

ESTIMATE OF ADDITIONAL LABOUR REQUIREMENTS BY CATEGORY FOR PERIOD TO MID-1947

PRODUCTION WORKERS	NON-PRODUCTION WORKERS	CLERICAL	SUPER-VISORY	TOTAL	% OF TOTAL ADDITIONAL REQUIREMENTS TO EXISTING TOTAL EMPLOYED AT END 1945
89%	7%	3%	1%	100%	110%

The above figures are approximate only, as a number of firms did not give a breakdown of their requirements, but showed the total irrespective of category.

Shift working : We have commented in this chapter, particularly in Part A, on the necessity for two and possibly three-shift working if the scarcity of productive machinery makes it imperative for that available to work maximum hours. The actual amount of shift working performed by the hosiery industry as a whole seems less than expected, if we take the replies to our questionnaire as a guide. They are as follows :

TABLE 27

SHIFT WORKING

	% OF ALL PRODUCTIVE WORKERS ON	AT END OF YEAR 1938	1945
2-Shift	... ...	9%	4·6%
3-Shift	... ...	2%	0·5%

Multiple shift work was, and still is, confined mainly to those working the basic knitting machines, and as shown earlier only about a quarter of all productive workers are employed on this work. Even so, it is obvious that many knitting machines to-day work one shift only and further expansion of production will probably mean an expansion of shift working.

As mentioned earlier, there is no virtue in shift working for its own sake, and from the human angle it has many disadvantages, particularly where night shifts are involved. We are strongly against night work and it is suggested that if a two-shift system is worked it should be on the basis of a double day shift, although it has been pointed out that transport facilities will require considerable improvement before such shift work can be extended.

In the particular case of fully fashioned stocking production the machinery position is so difficult that both employers and trade union officials recognise the present necessity for three-shift working if possible. We strongly urge on employers three important requirements where shift work is undertaken:

(*a*) Reasonable amenities to be available to those concerned—travelling, canteen, first-aid, etc.

(*b*) Reasonable supervision at all hours.

(*c*) The provision of duplicate machinery and equipment wherever possible to minimize shift working.

Production range: Our questionnaire was designed to get from firms an approximate idea of post-war plans in relation to the pre-war range of products. Seventy-five per cent. of those replying hoped to revert to their pre-war range as soon as possible, the remainder wishing to limit their range. Thirty-four per cent. wanted to make a reduced number of styles within the range, the remainder not being very clear in their views. These replies tend to bear out our personal observations that most manufacturers felt that their pre-war range was too great, leading to inefficiencies in many directions. As mentioned earlier, we feel that it was not always realized how much efficiency was lost by an attempt to satisfy everybody. The industry's own reasons given for loss of production efficiency are given below, in stated order of importance:

Inconstant demand (seasonal fluctuations).
Foreign competition.
Uneconomic ordering by distributors.
Lack of home demand.
Price-cutting.
Fashion changes.
Lack of export orders.
Over-production.
Too many styles.

Much investigation and discussion has taken place on the productive efficiency of knitting machines and a surprising variation in figures resulted. We agree that it is not possible to compare all types of machines directly, but as the figures varied from about 60% up to 100% (actually impossible) and in many cases were not kept and analysed as regular routine, we must state that this situation is not satisfactory. A prelude to increased productive efficiency is to record and analyse reasons for loss of production against the target, and we strongly urge all manufacturers to devote more attention to this objective.

Quality of Production : We have endeavoured to ascertain the views of the industry on the principal reasons for producing "second quality" goods. To our surprise 47% of those replying stated that they *produced* no such goods, which, if true, would indicate a surprisingly high level of output. It is possibly true that no inferior goods are *sold*, but the question related to *production*. Those who felt that quality of production was not all that could be desired gave the following reasons, in order of importance, for a drop in quality standards :

Faulty yarn or material.
Unskilled labour or carelessness.
Needle breakages or mechanical breakdowns.
Price-cutting.
Foreign competition.
Too many design changes.

The hosiery industry, producing in the main a large number of almost identical goods, is in a particularly favourable position to utilise the most modern quality control techniques, and, as mentioned previously, we strongly recommend these to the attention of the industry. "Quality Control" has, during the last few years, become associated with a statistical form of inspection which has been applied in many war industries, particularly on quantity production. The system and its application has been described fully in the technical press, one of the best descriptions being published by The British Standards Institution*. It is not necessary to install such a complete system in order to have a close control over quality, and those firms having good inspection methods at present may not find great advantage in going to these lengths. It has, however, been proved in many industries that first-class quality control methods do more than ensure goods of the right quality; they also enable a closer analysis of production problems to take place.

Production Control : We have been surprised by the lack of information possessed by the industry on its degree of productive efficiency. This is usually taken as the actual percentage of production achieved by machine, department or factory in relation to a theoretical 100%. Figures were kept in only a few cases within our experience and questionnaires revealed anything from 60% up to 100%. In our view the necessity for keeping these records and analysing them is not sufficiently realised by the industry and possibly arises because of the comparative lack of production specialists employed. Most hosiery manufacturers are men of experience in a wide variety of activities and the employment of specialists in techniques such as production control, personnel management,

* B.S.S. 1008 "Guide for Quality Control and Control Chart Methods of Analysing Data" (for use with B.S. 600.R., Quality Control Chart).

inspection, etc., is not usual, partly owing to the small size of the average firm. We believe there is much to learn here from other industries, particularly engineering, and we recommend that wherever possible production engineering techniques are studied and employed. We also urge the importance of corporate technical activity in the industry through the medium of professional institutions such as the Textile Institute and the Institution of Production Engineers. This subject is discussed more fully in Chapter X under *The Training of Technicians.*

Production Control techniques may be employed in many directions by the industry and the following are typical activities which could be covered by this section :

(*a*) Collaborate with architects in designing extensions and new factories.

(*b*) Plan new and revised internal layouts to provide best flow of all work.

(*c*) Plan and provide adequate " service " facilities for production workers. Examples are conveyors, chutes, trucks, communication systems, storage facilities, etc.

(*d*) Keep under review latest developments in machines and equipment.

(*e*) Prepare knitting and other specifications, drawings, etc.

(*f*) Design and prepare tools, special machines and similar equipment for miscellaneous processes, including training.

(*g*) Act as focal point for time and motion study techniques.

Certain appropriate comments bearing on this section are made in the report of the British Silk Stockings Corporation delegation to America, which examined this problem in relation to women's stockings only :—

> " Great care and thought had been applied to the lay-out of both the knitting machines and ancillary operations in order to produce a steady flow of production in one direction.
>
> The servicing of this supply line was also well organised, yarn was delivered to the right place and at the right time, and as the various stages of production were reached, the necessary supplementary items, such as transfers, boxes, labels, etc., were ready.
>
> At various points along the supply line were checking points where samples were taken for examination."
>
> "FACTORY AND FACTORY LAY-OUT
>
> Much more careful thought and attention to detail appeared to have been applied to this important factor. . . .
>
> Coupled with this was the principle which appeared to be almost a slogan ' allow plenty of room,' it being considered that any saving in the standing charges on a reduced area were more than swallowed up by losses resulting from the impeded flow of production, due to a cramped lay-out.
>
> ORGANISATION AND CONTROL
>
> Again taking into account the larger units, there appeared to be much to learn. Based on a ' team ' of specialists under a General Manager, and made possible by the availability from within the factory of essential statistics, and from outside by general statistics supplied by the Manufacturers' Association, planning and production control had been brought to a fine art.
>
> It should not be assumed that the recording of statistics and the controlling of production ' on paper ' have been allowed to get out of hand, as can so easily happen ; only essential figures appeared to be kept and there was no noticeable excess, either of paper work or of clerical staff. The result, however, was that the facts on which to make decisions or by which questions could be answered, were readily available.
>
> Control by a ' team ' is by no means unknown in this country but it was very interesting to observe that authority appeared to be more readily delegated to the members of the ' team ' and that whilst being ready, if necessary, to get down to detail, the Managing Director left himself free to plan."

Uneconomic Competition : It is an indisputable fact that some large firms producing wide ranges of goods sold some types at prices which were uneconomic in relation to their cost of production, compensating for this by loading an undue percentage of overheads on to the products of other sections. This led to the establishment of price levels which specialist firms making those products were forced to follow with repercussions on wage rates, and debasement of quality. The main difficulties of this kind were caused by firms who, owing to unsatisfactory costing methods, did not appreciate the position. We believe that these firms themselves must have suffered from these difficulties of their own creation and we suggest that the elimination of this will be one of the advantages which will result from the adoption of the recommendations we have made on costings in Chapter VI.

Flexibility of Labour : We have mentioned earlier the traditional reluctance of hosiery workers, particularly women, to perform work, even in the same work room, on which they were not previously engaged. This is a well-known condition among many women in many industries, and to a certain extent is conducive to high skill on a particular job. It can also be appreciated as a psychological factor of some importance. We feel, however, that this rigidity is often carried too far to be conducive to *overall* efficiency and reasonable flexibility of work should be accepted by workpeople and management if it leads to a more even flow of work by the removal of bottlenecks, and to a greater stabilization of the working force in any one factory. We will go as far as to say that in more normal times than the present, a policy of full employment can only be carried out if there is acceptance of greater flexibility, and to a certain extent, mobility among *all* sections of the industry. Obviously the place to instil ideas of this nature is in the initial training period. Training methods of the better kind will also tend to shorten the time required to learn a new job, and so will give added impetus to such an outlook as, without doubt, some of the reluctance to change has a financial background—"how much shall we lose by transfer"—and the greater the stability of earnings during change of job the easier it is to accept the change.

Job Rating : The foregoing remarks lead us directly to the problem of "the rate for the job." We have mentioned earlier the need for a more scientific approach to "Job Rating." It many cases examined we felt that the amount of skill in the jobs did not seem to be reflected in the relative earning capacity of average workers on these jobs, and this is most important, not only in connection with the preceding paragraph, but also in giving the right degree of satisfaction to those employed. "Job Rating" has been developed to a considerable extent in this country during the last few years, many examples and much literature being available on the subject. We recommend it for closer study and application, and consider that as so many jobs in the hosiery industry are similar the Employers Organisations and the Trade Unions should initiate this activity jointly.

Optimum size of Unit : This is a problem which is of interest to all industries, and we have found it impossible to come to firm conclusions in relation to the hosiery industry. Taking the stocking section of the industry as an example, we quote the following extract from the British Silk Stockings Corporation report issued recently (the machines referred to are knitting machines) :

" It is usually assumed that the prevalence of large units in America is due mainly to the very large home market in that country, it may, however, be argued that the world is the market and that potential demand therefore justifies planning on a larger scale in this country. This argument may be sound providing that it may be assumed that such planning enables manufacturers to give better value for money and thus compete in the larger world markets.

Before developing this point it must be understood that by ' small ' we mean a firm having about 100 operatives and by ' large ' a firm having two to three thousand operatives. It would be unfair to make a comparison with the smallest unit because although most firms start in a very small way, they usually reach the 100 operatives stage fairly quickly.

Referring firstly to Fully Fashioned hose production, as stated earlier in this report, the delegation, after very careful study of the problem are satisfied that the key to efficient production is in management. Given skilled supervision and control it is suggested that a firm with 10 Fully Fashioned frames can produce as efficiently as one with 1,000. There are, however, certain possible advantages peculiar to the large unit such as a lower appropriation per dozen for advertising, quality control, research training schemes, etc. These become more noticeable at round about the 50 machine stage, as they often do not arise in the smaller units.

In the case of Seamless Hose production, it was not possible to make such a careful comparative study of this problem, as small units were not operating. The largest plant visited had 2,400 machines on one floor and was a marvel in efficiency and control. At the same time it was possible to imagine that after a certain point of growth had been reached the advantages slowly decreased, it became therefore a question of ascertaining at what point the steadily rising state of efficiency begins to rise less sharply.

Assuming the existence of efficient management, this point is reached when it becomes necessary to duplicate management, or to put it in another way, when the existing management is fully occupied in managing and controlling.

In spite of the careful consideration given to this subject, the delegation is not qualified to state the minimum number of machines which can be operated efficiently within the existing set-up of the industry.

At present we have :—

35	manufacturers	with less than	50 machines
28	,,	,, between	51 and 100 machines
49	,,	,,	101 and 250 ,,
12	,,	,,	251 and 500 ,,
6	,,	,,	501 and 1,000 ,,
2	,,	,,	1,000 or more machines.

It is suggested that the manufacturers with less than 50 machines, are, if they are keeping their plant up-to-date, in the development stage and as such are the pillars on which the industry has been built.

Those with between 51 and 100 are presumably in the next stage of development, and in both cases, providing there is no stagnation and that a first stage minimum of 120 machines is the objective, the trade can be reasonably healthy."

Reference has also been made in Chapter II, Table 2, to the general structure of the industry, and this does not differ in marked degree from other industries where the small firm (under 100 employees) predominates. We have mentioned on many occasions the comparative lack of facilities available to such firms on many matters such as finance, research, testing, training, etc., and we refer frequently in our report to the desirability of joint activity in some of these directions by two or more such small firms in sharing facilities.

It has been relatively easy in the past to start up a small hosiery business with little capital, and while this should not in future be discouraged, we wish to stress the desirability of conformation to Factories Act, wage and other standards among all firms so that the standards of the industry are not debased.

Lighting, Heating and Power Transmission : We have had the benefit of advice on the above from a group of experts to whom our thanks are due. Reference should be made to the useful memorandum which they presented to us and which is printed as Appendix C. A practical demonstration of the value of

modern methods of colour and lighting as an aid to efficiency in hosiery production has already been given by an Exhibition of Lighting and Colour in Industry arranged at our suggestion by the General Manager of the Leicester Electricity Service, The Electric Lamp Manufacturers' Association, the Electrical Development Association, the British Colour Council, Messrs. Wolsey Limited, and others, and staged in the Abbey Park Mill, Leicester, in May and June this year. Persons in the industry interested in this subject will no doubt have visited the Exhibition as we did and as expert advice on the questions involved is given in Appendix C there is no need for us to comment further on these questions here. During the war years the hosiery industry has had great success with a voluntary fuel-saving scheme and a short account of this is given in Appendix D.

CONCLUSIONS AND RECOMMENDATIONS—PART G

(*a*) Production planning was not easy before the war owing to the constant changes in designs, styles or colours which were required and the comparative lack of long term planning was one of the causes of short-time working.

(*b*) We doubt whether a first-class production plan can be carried out in many factories unless prior building or rebuilding work is accomplished and we recommend that every facility be given to firms wishing to put such building work in hand. We also urge hosiery manufacturers to make every effort to have floor areas as open as possible so that the utmost flexibility of productive layout can be achieved.

(*c*) We are strongly opposed to outworking as a permanent general policy if performed in the home of the individual worker but we recognise that when it is organised in the form of small units, with due regard paid to wages and conditions, outworking may be of great value in providing a balanced labour activity and an additional source of labour.

(*d*) We are strongly opposed to night working though we recognise the necessity for three-shift working in the fully fashioned stocking section pending re-equipment. We suggest that where a two-shift system is worked, a double dayshift system should be adopted.

(*e*) We believe that many firms in the hosiery industry have much to learn from other industries, particularly engineering, on matters such as production control, inspection, etc., and we recommend that wherever possible engineering production techniques are studied and employed.

(*f*) In our opinion there is scope in the industry for a greater degree of flexibility in the employment of workers on different jobs. Account should be taken of this in providing training arrangements and we also consider that Employers Organisations and Trade Unions should jointly initiate arrangements for closer study and application of modern techniques of job rating.

IV. Raw Materials

APART from packing materials and fuel the main raw materials used by the hosiery industry are as follows :—

(*a*) *Yarns :* Worsted, Woollen, Cotton, Rayon, Pure Silk, and small quantities of Shetland Wool, Cashmere, Angora, Alpaca, etc., and mixtures thereof. Of the newer synthetic fibres, Nylon which was not available before the war will be important.

TABLE 28

CONSUMPTION OF YARN

(*Source* :—1935 from Census of Production, 1937 from Import Duties Act Inquiry 1937, 1945 from Hosiery Control, Board of Trade.)

	1935 million lbs.	1937 million lbs.	1945* million lbs.
Cotton	62·3	70·6	35·1
Worsted and Woollen	60·6	63·8	47·9
Rayon	21·3	20·7	9·0
Pure Silk	2·7	3·5	Nil
Other Fibres	—	—	3·5
Total Consumption...	146·9	158·6	95·5

* The 1945 figures were affected by war-time shortages and rationing.

1. The 1935 and 1937 figures for rayon include some yarns used for warp knitting but not all the rayon usage by this industry. These figures are not therefore strictly comparable with the 1945 figure.

2. In 1945 the proportion of yarn used for Government contracts was 20.7% of the total—the bulk of this being coarse counts worsted.

3. Worsted and woollen yarn includes shoddy yarn.

(*b*) *Woven Cloth :* Beiges, Sateens, Calicos, Twills, and Flannelette for underwear (tops of pants, fronts of vests, etc.), of which consumption (rationed) in 1945 was at the rate of approximately 3.5 m. sq. yds.

(*c*) *Elastic :* for underwear. Consumption (rationed) in 1945 was at the rate of approximately 260,000 gross yards. Small quantities of fine covered rubber thread were also used.

(*d*) *Braids, Tapes and Trimmings*

(*e*) *Buttons*

(*f*) *Sewing Cotton*

We have confined our attention to yarn questions and have been much handicapped by the lack of pre-war figures later than 1937.

We understand that before the war there was little difficulty in obtaining adequate quantities of yarn and hope that, once the present temporary shortage of labour in the spinning industries is overcome, this question will not give any cause for anxiety. The quality of yarn was usually satisfactory. We have mentioned in Chapter III some of the difficulties which manufacturers in various sections of the hosiery trade encountered. Some problems were common to most, or all, of the sections and we now deal with them in a general way.

We have referred earlier to the scope for expansion in various sections of the hosiery industry, particularly in the fully fashioned section, where we have

laid special emphasis on the need for installing very substantial quantities of fully fashioned stocking machines. All types of yarn are in short supply at present owing to the effects of the war. We have not made detailed enquiries into these shortages as our concern is with the long-term position of the industry. We recognise, however, that shortages of yarn during the next year or two may prove a considerable handicap to development and we must therefore touch briefly on the prospects as we see them.

Cotton Yarn : At the moment (June, 1946) the position is extremely difficult. The present rate of supply to the hosiery industry is about 60% of the 1937 rate of consumption. This rate of supply is increasing but it will obviously be a considerable time, very probably over 18 months, before supplies reach the 1937 rate. The spinning industry and the Government are no doubt doing all they can to improve matters and we can only urge that their efforts be maintained.

Worsted and Woollen Yarn : The supply position of wool yarn (including shoddy yarn) is rather better than is the case with cotton yarn, the present rate of supply to the hosiery industry being over 80% (by weight) of the 1937 rate of consumption, though this is partly accounted for by the use of heavier yarns of coarse counts. The rate of supply is increasing at present and if the increase can be maintained at its present rate the 1937 rate of consumption may be reached within 12 months. No doubt also greater quantities of raw materials of rarer fibres will become available for spinning.

Silk Yarn : Silk yarn was the most important of the yarns used by British fully fashioned stocking manufacturers before the war, about two-thirds of their total output by volume in 1937 (excluding wool) being silk stockings. Silk has not been available for the manufacture of stockings during the war. Some is now available from Ministry of Supply stocks and in small amounts from abroad but the price is between six and eight times the pre-war price*. Future prospects cannot be assessed until more is known about the future of Japan both as a producing country and as a supplier. We understand that the Government is enquiring at present into the prospects of Japanese production and we would urge that the industry should be informed as soon as possible of the prospects of supplies being made available (through commercial channels or otherwise).

Rayon Yarn : The present rate of supply of rayon yarn to the hosiery industry is appreciably below the 1937 rate of consumption. The bulk of the rayon yarn consumed by the industry was used for the manufacture of women's seamless stockings. Recent estimates by rayon producers have indicated that, owing to various difficulties, supplies of rayon yarn to the hosiery industry are not likely to increase during the second half of the present year. This position is most unfortunate and, in view of the importance to the hosiery industry of an early increase in supplies of rayon yarn, we recommend that the matter be investigated fully. It is interesting to note that stocking manufacturers in the U.S.A. have experienced considerable difficulties in getting sufficient supplies of rayon yarn, thus contributing to the shortage of supplies of stockings in the U.S.A. This also seems somewhat surprising in view of the fact that U.S. rayon production in 1945 (all types) was over twice the 1939 volume. According to a statement

* See Footnote on page 21.

attributed by the U.S.A. trade press to Mr. Earl Constantine the difficulty in U.S.A. in connection with rayon fully fashioned stockings is due to the doubts of the U.S. rayon producers about the future of fully fashioned rayon stockings in view of the competition expected from nylon stockings, these doubts having caused rayon producers to adopt policies under which many stocking manufacturers are unable to obtain adequate supplies of rayon yarn.

It is not yet possible to assess to what extent nylon will replace rayon for the manufacture of stockings of the finer gauges. As we mention later, supplies of nylon will be very limited for some time, and we would urge manufacturers of women's stockings to plan for the satisfaction of their needs largely by the use of rayon for the next two or three years. Even if nylon proves extremely popular there will obviously still be a long-term need for large supplies of rayon in view of the very considerable expansion of production of women's stockings to which we have referred in Chapter III.

In dealing with women's seamless and fully fashioned stockings in Chapter III we have referred to the use of high twist rayon yarn and have suggested that considerable development in the use of this yarn, such as has already occurred in the U.S.A., is likely. The demand for high twist yarn for both seamless and fully fashioned stockings may increase to as much as five times the pre-war rate of consumption of this type of yarn and we wish again to stress the importance of ensuring that twisting capacity increases proportionately to the demand. This twisting capacity (with machine adjustments) could be used equally well for the twisting of nylon yarn and we hope that increases in twisting capacity will not be retarded by any fear on the part of the throwsters that substantial use of nylon instead of rayon, when the former becomes available, will render this extra capacity unnecessary. We have already suggested in Chapter III that manufacturers expecting to require increased supplies of twisted yarn should advise the throwsters of the position so that forward planning of production by the throwsters will be possible. This applies equally to producers of women's seamless stockings.

We consider that, while contact between individual manufacturers and throwsters is indispensable, the matter is one which should be the subject of consultation between the hosiery industry, the throwsters and the yarn producers (both rayon and nylon). In our opinion this arrangement could best be secured through the medium of the appropriate Sub-Committee set up by the Hosiery and Knitwear Council as suggested later to consider and advise on the raw material problems of the hosiery industry.

Nylon Yarn : Nylon yarn has been produced in this country for the first time during the war years and was used for war purposes except for very small quantities which were allocated to stocking manufacturers for experimental purposes. The rate of supply is at present very small and the existing producing plant is not likely to reach its full output before 1947 owing to delays in obtaining sufficient capacity for processing subsequent to spinning. The supply of nylon yarn which will be available for the hosiery industry will not exceed a rate of 750,000 lbs. per year based on 45 denier yarn until the new plant which is being set up gets going, when production will be stepped up very substantially. It is anticipated that the new plant will not be in production before mid-1948, at the earliest. In the meantime panel yarn for stockings will be available in 30 and 45 denier and we understand that supplies will be so divided initially

between seamless and fully fashioned stockings as to provide for production of these two types in approximately equal quantities. The actual rate of yarn supply from the existing plant will not, however, reach the rate of 750,000 lbs. per year mentioned above since to the extent that 30 denier yarn is supplied the weight of yarn produced will be only two-thirds of that which would have been obtained by producing 45 denier yarn, though the length of yarn produced will be the same. The development of nylon stocking production can only be on a limited scale for some time. As compared with U.S. manufacturers who, as we have mentioned in Chapter III, produced 8 million dozen pairs of nylon stockings in 1941, United Kingdom manufacturers have little experience in this field. The limited availability of nylon yarn in the next few years will further increase their handicap. We regard the position as most unfortunate and hope that the Government will take all possible steps to assist in making increased supplies available.

There are several other synthetic fibres which have not yet come on the market. Little is known about them as they are still in the experimental stage.

The preceding brief consideration of the yarn supply position indicates that none of the existing shortages will disappear during the present year. To some extent shortages of one fibre will accentuate the demand for other fibres and partly for this reason, it is impossible to estimate how long the shortages will last. We consider it essential that the Government should control the allocation of *yarn* between the various yarn-using industries and also between home and export supply to ensure that all interests receive their due share so long as the shortage persists. We also consider it desirable to continue, during the period of shortage, the present arrangement under which the hosiery industry is given at intervals an estimate of supply prospects to facilitate forward planning, and we hope that it will be possible to give estimates further in advance than at present.

The hosiery industry will be greatly handicapped by yarn shortages for some time, the period varying with the type of fibre involved, and there is no room for easy optimism about the long-term position. All possible measures which will help in increasing yarn output should be taken, and we are confident that progressive hosiery manufacturers will do all they can to assist, for example by sponsoring flow production in consultation with the yarn producers.

We have found a general opinion among hosiery manufacturers that closer collaboration between the hosiery industry and the yarn-producing industries is desirable. We agree with this opinion, and consider that a closer understanding of mutual problems by the hosiery industry and yarn-producing industries would help both during the period of yarn shortage and afterwards. We therefore recommend that the Hosiery and Knitwear Council should, as a matter of urgency, set up a Sub-Committee or Committees on which the hosiery industry and the yarn-producing industries are represented, to give urgent consideration to the measures which the hosiery industry, the yarn producers and the throwsters could, jointly or separately, adopt to assist the yarn producers and throwsters to obtain maximum output of yarn for hosiery manufacturers. The Sub-Committee or Committees should also be charged with the consideration of long-term questions concerning hosiery yarn.

Bulk production and long runs which we have advocated in connection with hosiery production would also help yarn production in the future as they have helped during the war years. As a short term measure bulk production makes it easier for the spinner to obtain his maximum output. As a long term measure,

specialisation on certain ranges of counts and qualities of yarn by individual spinners will encourage concentration of ordering which will be reflected in a lowering of costs of production and prices.

Whilst it is not considered advisable to specify any particular range of counts, it is hoped that the spinners will themselves subscribe to their own greater efficiency by each spinner confining his activities to a limited field of yarn counts and qualities, which will give him a sufficient bulk of orders for each type to ensure long runs. We are aware of the diversity of the yarns used by hosiery manufacturers and of the machinery which they have to clothe. We have therefore advocated voluntary specialisation by the spinners themselves, as this would permit of specialisation in each plant while at the same time providing for the necessary diversity in counts and qualities.

During our enquiries several people made the point that, before the war, some hosiery manufacturers at times received yarn of counts differing from those ordered and occasionally did not detect the difference until after the yarn had been knitted into garments. We do not regard this as a serious problem. Any manufacturer in doubt about the yarn he receives can either test it himself, or, if he has not the necessary equipment, can use one of the yarn testing establishments which are situated in all the main hosiery centres.

Another point which some manufacturers think requires investigation is the question of the standard moisture content of worsted yarns. We do not propose to comment on this somewhat technical question beyond suggesting that it should be a subject for consideration by the Sub-Committee mentioned herein.

As we have suggested in Chapter III, there is room for closer collaboration between hosiery manufacturers and yarn producers, on the determination of types of yarn most suitable for specific purposes, so that both manufacturers and producers may benefit. For example, determination of the most suitable twist or twists in rayon yarn for women's stockings would be of assistance to both stocking manufacturers and throwsters. Such problems are matters to which the appropriate Sub-Committee might with advantage direct its attention. It will no doubt involve research into the suitability of yarns for knitting processes and the assistance both of the Hosiery Research Institute and of the research establishments concerned with the yarn, will be needed.

A good deal of difficulty was caused before the war by the fluctuation in yarn prices due to considerable variation in the price of raw materials and this was one of the causes of the failures which occurred. In an industry such as hosiery where raw material costs amount to between 40% and 50% of the value of the annual output, the value of a measure of stabilisation of raw material costs which will eliminate violent fluctuations is clear. We have not attempted to suggest what steps ought to be taken in this connection but would here express our strong opinion that, at least, causes (*e.g.* speculation) other than changes in the costs of producing, transporting, and distributing the raw materials should be counteracted.

CONCLUSIONS AND RECOMMENDATIONS

(*a*) We recommend that Government control of the allocation of yarn between the using industries and between home use and export of yarn should be maintained so long as the present shortages persist.

(*b*) We would urge women's stocking manufacturers to plan for the satisfaction of their needs largely by the use of rayon yarn during the next two or three years at least.

(*c*) We recommend the setting up by the Hosiery and Knitwear Council of a Sub-Committee or Committees on which hosiery manufacturers, yarn producers and throwsters are represented, so that matters of mutual long and short term interest, such as mentioned in this report, may be discussed and any necessary action taken.

(*d*) Measures should be taken to counteract fluctuations of raw material prices, at least in so far as these are due to causes other than changes in the cost of production, transport and distribution of the raw material.

v. Machinery

ANY consideration of the position and efficiency of the industry must involve a careful examination of the means of production. Various sections of this report refer to machinery of the types used for the production in question, but in this section we have attempted to give a general picture of the machinery position as a whole.

The British Hosiery Machine Building Industry : This industry appears small in relation to the present scale of demand for its products. It comprises less than 20 firms situated mainly in Nottinghamshire and Leicestershire with a total employment pre-war of under 4,000 employees. The large firms with one exception are members of the British Knitting Machine Builders' Association which is primarily concerned with commercial activities and produces little in the way of technical co-operation. Our impression is that a strong individualism prevails among the firms and there is in general little technical co-operation.

Certain of the machine builders are associated with firms producing machine needles and generally there is a fairly close co-operation between the machine builders and the needle makers. It has been suggested to us that the number of different types of machine needles is excessive. We have not felt it necessary to enquire into this question which seems to us to be a matter for joint discussion between the hosiery, machine building and machine needle industries.

There is little effective co-operation between the hosiery industry and the machine building industry, or between the hosiery industry and the machine needle industry, and relationships are generally between individual firms on a producer/customer footing. A Joint Committee of Hosiery Machine Builders and Hosiery Manufacturers was set up in 1944 under the chairmanship of the then Hosiery Controller, its terms of reference being to consider problems and make recommendations concerning the allocation of new machinery and the scrapping of obsolete machinery. The Joint Committee sent its recommendations to the Government before the end of the war and, after discussion, these were not pursued. A meeting of the Joint Committee was called in December 1945, to consider enquiries made on our behalf, but in general it would seem that, apart from discussion of any questions arising from its recommendations to the Government, the Committee has done the job for which it was set up and consultative arrangements for the future will need to be reconstituted.

A number of machine builders have expressed the view that a greater degree of co-operation between the machine builders and the hosiery industry is unnecessary. In spite of this we feel that much good might come from closer association between the hosiery, machine building and machine needle industries and suggest that their common problems, when properly appreciated, are sufficient to justify joint consultation.

Production, Export and Import position pre-war : The following table illustrates the extent to which British machinery satisfied home requirements and contributed to exports before the war :—

TABLE 29

BRITISH HOSIERY MACHINERY PRODUCTION, EXPORTS AND IMPORTS

YEAR	BRITISH PRODUCTION		PERCENTAGE EXPORTED	HOSIERY MACHINERY RETAINED IMPORTS (pre-war prices)	IMPORTS EXPRESSED AS A PERCENTAGE OF BRITISH PRODUCTION
	At prices then current	At present price levels*			
1930	£618,000	£912,000	39%	£412,000	68%
1934	£812,000	£1,218,000	55%	£402,000	50%
1938	£1,011,000	£1,517,000	46%	£393,000	39%

* Present price levels are calculated on the basis of 50% increase on pre-war prices given to us by machine builders early in 1946 and are referred to later as "1946 Prices."

As the above table shows the amount of machinery imported was substantial though decreasing. It consisted mainly of fully fashioned stocking machines, seamless stocking machines and parts, and flat bar machines. British manufacturers are now expanding the production of fully fashioned and seamless stocking machines, as we shall describe later, but we are not aware of any likelihood that flat bar machinery will be made here on any scale.

Present and Future Position: With the co-operation of the machine builders, to whom our thanks are due, we have received a good deal of information from most firms in reply to a questionnaire. This covers all the large firms and we regard the general picture presented as a reliable indication of the general position. The following table shows the approximate production and employment position in the machine building industry covered by the questionnaire. The estimates have been adjusted to exclude fully fashioned machinery (all types) which is dealt with separately.

TABLE 30

PRODUCTION AND EMPLOYMENT IN THE HOSIERY MACHINE BUILDING INDUSTRY

YEAR	PRODUCTION (1946 prices)	PRODUCTION EXPRESSED AS A PERCENTAGE OF 1938 PRODUCTION	NUMBER OF PEOPLE EMPLOYED	NUMBER OF PEOPLE EMPLOYED EXPRESSED AS A PERCENTAGE OF NUMBER EMPLOYED IN 1938
1938	£1,472,000	100%	3,070	100%
1945	£260,000	18%	3,400(*a*)	111%
When fully manned (in 1947)	£2,500,000(*b*)	170%	4,200(*c*)	137%

(*a*) Many of these people were engaged on war work in 1945.

(*b*) Obtained by applying to machine builders pre-war outputs the expansions they have estimated.

(*c*) Obtained by adding machine builders' estimates of extra people required to their 1945 labour forces.

Table 30 indicates a very considerable proposed expansion of the machine building industry, involving the employment of a substantial number of extra workers, most of them skilled. It must be borne in mind that about 75% of the machine builders have stated that they contemplate introducing new machines in the near future and have presumably taken into account the loss of production due to teething troubles attendant on new designs. Even without extra difficulties due to new designs, the industry would be doing extremely well to obtain an increase in output of 70% over 1938 with a labour force increased by only 37%. Bearing this in mind, together with the fact that the estimated full output is over 9 times the 1945 turnover of knitting machines, and with the knowledge that the labour supply position in the Midlands is extremely difficult, we reach the conclusion that the machinery industry is unlikely to reach its full rate of output before late in 1947. In our view it is not safe *in prevailing circumstances* to assume that more than the 1938 turnover will be achieved in 1946. Moreover, within this turnover a very considerable provision will need to be made for the recruitment of machinery (reconditioning) which, though not obsolete, has been running during the war with insufficient maintenance or, while out of use, has been robbed of parts to keep running machinery going. This provision will be very much heavier than the normal pre-war requirements of spare parts. It is not possible to ascertain what amount of capacity will be needed for this purpose, but we should judge that it will not be less than 25% of the machine builders' output.

Examining the order position of the machine building industry (again omitting all types of fully fashioned machinery) we find that according to the information given by the machine builders it is approximately as follows :—

Total orders accepted for delivery 1946 and 1947 combined :—

Home orders	£2,600,000	48%
Export orders...	£2,800,000	52%
Total	£5,400,000	100%

If we now compare estimated production with orders for machinery and spares as shown above we see that :—

	Total	*For U.K. Manufacturers (48%)*
1946 output (say)	£1,500,000	£720,000
1947 output (on an optimistic outlook)	£2,500,000	£1,200,000
Total	£4,000,000	£1,920,000

Hence orders to the value of £1,400,000 will remain to be dealt with at the end of 1947. On the basis of 48% of production for the home market the volume of home orders outstanding even at the end of 1947 would be about £680,000.

This is not surprising when the very small amount of machinery production during the war is considered, but from the point of view of British hosiery manufacturers who need machines, including spares and repairs, quickly to enter export markets before they become saturated, the delay may be serious. It is to be noted in this connection that many of the machine builders say that

they are unable to finalise their plans owing to shortage of technicians. If, as we think, the plans of some of the machine builders will not be realised, the position will be even worse. Moreover, some firms are more heavily loaded than others in relation to their anticipated output, and in these cases the delivery position will be substantially worse than the average indicated above.

On the position as outlined so far we are led to the conclusion that the British hosiery industry will be handicapped during the next two or three years by inability of the machine builders to supply new machinery needed, and to service and rebuild existing machinery with sufficient speed.

Machinery requirements as stated by the Hosiery Industry : The Board of Trade have recently obtained information about machinery requirements from the bulk of the firms in the hosiery industry, and have provided us with the total figures given in Table 31, which show new machinery needed but do not include repair and rebuilding work :—

TABLE 31

REQUIREMENTS OF, AND ORDERS FOR, MACHINERY DURING THE PERIOD UP TO DECEMBER, 1947

(*Source:* Board of Trade)

TYPE OF MACHINE	REQUIREMENTS FOR 1946 AND 1947		ORDERS PLACED FOR DELIVERY IN 1946		ORDERS PLACED FOR DELIVERY IN 1947	
	VALUE £000's	NUMBERS OF MACHINES	VALUE £000's	NUMBERS OF MACHINES	VALUE £000's	NUMBERS OF MACHINES
British produced						
Fully Fashioned Stocking Machines (Multi division leggers)	5,835	778	442	59	562	75
Fully Fashioned Stocking Machines (Heelers) ...	21	19	10	10	9	8
	5,856	797	452	69	571	83
Fully Fashioned Outerwear and Underwear Machines	181	54	75	23	30	9
Circular Stocking Machines	995	3,043	320	988	118	336
Circular Half Hose Machines	926	2,582	343	944	162	433
Circular Underwear Machines (Ribbed, Plain, Interlock, etc.)	1,019	1,701	464	779	120	207
Circular Outerwear Machines	194	245	30	38	62	78
Circular Glove Machines	10	35	3	11	4	14
Total British Machines (excluding Fully Fashioned Stocking Machines)	3,325	7,660	1,235	2,783	496	1,077
Foreign produced						
Flat Bar Machines	678	1,235	254	444	80	129
Circular Fabric Machines (Terrot type) ...	52	94	1	2	—	—
Single Head Fully Fashioned Stocking Machines	178	317	15	26	7	12
Total Foreign Machines	908	1,646	270	472	87	141
Add British Machines	9,181	8,457	1,687	2,852	1,067	1,160
GRAND TOTAL	10,089	10,103	1,957	3,324	1,154	1,301

It will be seen from Table 31 that, according to the information given by hosiery manufacturers, the orders they have placed for new British machines for delivery in 1946 and 1947 (excluding all types of fully fashioned machines) amount to a total of £1,625,000. The difference between this figure and the value of orders for new machines and repair parts, etc. (again excluding fully fashioned types) booked for 1946 and 1947 delivery by the hosiery machine builders (£2,600,000 see page 77) amounts to nearly £1,000,000. This difference may be due in small measure to the fact that the figures in Table 31 do not cover all hosiery firms, nor do they cover any firms proposing to enter the industry. This, however, would not account for more than a small part of the difference, and it is clear that the amount of machine building capacity needed for the production of spares, etc. is very substantial.

It does not seem from the foregoing that the machine builders can be charged with underestimating the demand for their products. A number of them have expressed the view that hosiery manufacturers are slow in placing orders for substantial quantities of machines. This seems to be borne out by Table 31, but hosiery manufacturers, for their part, point out the difficulty of placing orders when a firm delivery date and price cannot be given. In any case, if our assumptions on page 77 are correct, it is clear that, even on the low figures supplied by the hosiery industry, less than half of the orders placed by British hosiery manufacturers for 1946 delivery will be met in that year.

Exports of Machinery: As mentioned on page 77, export orders for machinery (excluding all types of fully fashioned machines) to be supplied during 1946 and 1947 amount to £2,800,000, which is rather less than the home hosiery industry requirements over that period, and is about 70% of the amount which we estimate will be produced over that period. The machine builders vary in the percentages which they propose to allocate to export, the range being from 25% to 75%. The average obtained by combining their proposals amounts to 52% of production for export, but it should be noted that a number of firms said that the proportion allocated to export might be higher initially than the percentage they gave as the normal figure. Many of the firms expressed the intention of treating home and export orders as of equal importance, though one or two propose to give preference to home orders as far as possible.

The views of the hosiery and machine building industries are in direct opposition on this problem. Some of the machine builders point out that they depended on export orders to keep them reasonably busy pre-war, that the immediate future offers great opportunities to develop and consolidate overseas markets, and that they have already undertaken substantial commitments for export and accepted deposits on orders. They also point to the importance to the country of their export trade. However, it must be noted that the hosiery industry exported about £3,000,000 worth of goods per annum in pre-war years. Very substantial expansion is possible, and we are of the opinion that at present prices an export level of four or five times that amount could be reached and maintained, provided that the materials, labour and equipment are made available. We consider that a large proportion of this substantial increase should come from bulk production goods. It is, however, essential that the goods we export during the present sellers' market shall be of a quality which will secure goodwill and permanent markets. They must therefore be of the right type, and made on up-to-date machinery which will achieve (*a*) the

necessary economies in production to permit production at competitive prices, and (*b*) a standard of knitting, making-up, etc., which compares favourably with that of competitive products.

The degree of obsolescence of machinery in the various sections of the industry is indicated where possible in the appropriate sections of this report and, as will be seen, a large amount of re-equipment is needed. By no means all of this will be required substantially for production for export which, even with the expansion mentioned above, may amount only to about 20% of the total output. At the same time it seems to us desirable, if maximum exports are to be secured, that some preference should be given in the supply of machinery to hosiery manufacturers who are in urgent need of it for production for export.

Flat Bar Machinery : This type of machinery is not made in this country. The main sources of supply pre-war were Switzerland and (French occupied) Germany. As will be seen from Table 31, the amount required by British manufacturers is £678,000. We note with satisfaction that the importation of a substantial part of this has already been licensed.

Seamless Stocking Machinery : Negotiations have been completed for a British concern to manufacture a certain type of American machine on licence in this country. The firm proposes to commence by assembling the machines from parts imported from the U.S.A., and of its requirements of some £200,000 worth of parts, licences have been issued for £50,000 to obtain the component parts from America to commence building. The firm is expecting to produce more and more parts in this country, and in eighteen months to be manufacturing here completely.

There are several other manufacturers on a smaller scale producing similar machinery, but it is not expected that the estimated requirements will be fulfilled in under three to four years. There are 24,000 seamless stocking machines of all kinds in the country, of which 10,000 have very little future, as they are of gauges unsuitable for present market trends. There are only 3,500 machines of 340 needles and finer, and it is estimated that at least 7,000 new machines will be needed in such gauges. The development of nylon yarn will have a distinct bearing on the development of this section. It is to be noted in this connection that the industry's estimate of requirements for 1946 and 1947 amounts only to some 3,000 machines of which rather over 1,300 are actually ordered. We have pointed out in Chapter III that the industry's estimate of 3,000 machines seems unduly conservative but it is important to note at this point that, unless the machine builders can be assisted to speed up their production of seamless machines considerably, it is doubtful whether even this conservative estimate of requirements can be met.

Interlock Machinery : There is a sufficient quantity of these machines in this country and the urgency to extend the number is not so great in this section as in many others. In this section, the necessity is not so much to acquire new types (although some modifications adding to efficiency are being made) but to replace machinery which, during the war years, has been run to exhaustion. It is a section in which, if machinery is to be exported, a greater proportion could be taken than in some other sections.

Circular Machinery (Underwear, Outerwear and Knitted Footwear) : This section, which has always been the British machine builders' strongest, is the

one to which we can look for an improvement in the machinery of the industry; and that without the use of foreign currency. All machinery builders are producing new types of transfer stitch or jacquard or wrapped stripe modifications, which make the old existing machinery more or less obsolete. It is in this section in particular that up-to-date machinery is needed quickly by the hosiery trade. As a case in point, a hosiery machine builder is producing a wrapped stripe fancy half hose machine, which produces goods so far in advance of anything made on existing comparable machinery in this country, that it will make goods produced on the old type of machinery less saleable abroad. The industry had a very substantial export trade of men's half hose to all parts of the world including the U.S.A. Indeed, it was the principal staple line of hosiery which sold in substantial quantities. We understand that this machinery is likely to be produced only in limited quantities for some time, and we feel that there is urgent need for giving preference in supply to British hosiery manufacturers who are prepared to devote the machinery to production for export.

Machinery for Women's Fully Fashioned Stockings: We have explained in Chapter III our views on the importance of obtaining some 1,500 to 2,000 up-to-date multi-division fully fashioned stocking frames for use in this country during the next four to five years. It is important to note, however, that Table 31 indicates that the industry estimates its requirements during 1946 and 1947 as about 780 machines, of which only 134 have been ordered. A further enquiry among stocking producers as to the number of machines needed during the next five years resulted in an estimate of about 250 for replacement and 850 for additional production. We feel that some comment is called for on the difference in the orders placed for new machines as compared with our estimate of requirements. In our view this difference is largely, if not entirely, accounted for by the fact that the new British fully fashioned machine has not yet undergone factory tests. It is understood that such tests are to take place in October this year, and if, as we believe from all the evidence available to us, the tests prove successful, then undoubtedly stocking manufacturers will show their readiness to place further firm orders. With their own unaided resources (though these are substantial) the British firms who will be producing this machinery would be quite unable to supply the amount of machinery already ordered. We understand that the prospect of obtaining substantial supplies from the U.S.A. during the next three years is small. We have therefore considered other possible methods of obtaining supplies which appear to be—

(*a*) machinery from the Russian occupied zone of Germany;

(*b*) production of new machinery in the British or other zone in Germany using German designs and technicians;

(*c*) assistance to the machine builders to enable them to increase their output.

We have been in constant contact with the only builder of fully fashioned machines who has signified any intention of a large scale building programme. During the time we have been in session we have had weekly reports of the progress made, and we had hoped to be able to say that we are satisfied that all possible steps are being taken by His Majesty's Government to encourage and assist the proposed expanded programme, of which we have been told. We feel that, with such assistance, there is a possibility that this important section of the industry will make the necessary advances within the limited time it has to do so, and time is the essential factor. *We regret that we cannot record*

such satisfaction, and it is with great disappointment that we have to register our grave concern that progress is so slow and that there is still no certainty that a matter of such vital importance is likely to mature. We strongly commend to the Ministers concerned that a prompt and immediate investigation should be carried out within their Departments, that the proposals should be treated as of the highest order of priority, and that the hosiery industry should be informed with all speed of the steps which have been decided on, whether they be positive or negative.

Machinery for Fully Fashioned Underwear and Outerwear (Cottons Patent Type) : Apart from recent advances which enable machines to operate at an increased speed, there has been little change in these machines for many years. The latest machines have eight divisions ; that is to say they knit eight garments at a time when filled. The output from these machines is naturally higher than that of the normal six division machines, but opinion in the trade is divided, and manufacturers in general are more concerned to have their existing six-division machines converted to higher speed. It has been suggested to us that the conversion capacity of the makers of these machines will not be affected adversely by their heavy commitments on fully fashioned garment and stocking machinery. We are very doubtful about the accuracy of this view, and think it likely that work on conversions will appreciably affect capacity for production of new machines.

Ancillary Machines : These are of many types, such as linkers and seamers, and a variety of other sewing machines used in making-up. While no actual statistics are available, it is thought that the great majority of these machines were imported, and few British machine builders make a comprehensive range. Germany was a large producer, and at least one British firm, not previously in the hosiery machine building industry, is taking steps to enter this field, using German basic designs.

We attach considerable importance to a greater degree of efficient mechanisation in the many making-up and other ancillary operations carried on in the hosiery trade, and we feel that, under present circumstances, special attention should be given to the provision of the necessary machinery for these purposes, as well as bringing up-to-date many of the *existing* ancillary machines. Considerable business awaits those who are prepared to specialise more intensively in studying this market and satisfying its needs.

Our members who visited the U.S.A. and Canada noticed the use, on fully fashioned stocking production, of expanding type examining machinery fitted with mirrors and counting devices. Although equipment of this kind is used in some units in this country it is not, so far as we know, as advanced as the most up-to-date types seen in the U.S.A. They were also struck by the excellence of the glass-topped tables used for pairing and folding of stockings, and noticed particularly in this section the almost universal adoption of transferring by a semi-automatic (Kaumagraph) vertical handled transfer machine, operated by the foot with the transfers hand fed from a roll. In the sock industry a method of roll transferring using irons with vertical handles was noted. Both these methods of transferring give great economy of effort, and we recommend that no obstacle be placed in the way of manufacturers wishing to import such equipment. Mention is also made of an ingenious clipper vacuum machine which was in general use for clipping and removing loose ends from inside fancy socks.

General : It is clear from the position described earlier that the machine builders will not be able to cope with the demand for machinery as speedily as could be wished. In a period when heavy demands on labour will be made from all trades it is difficult to make out a case for special treatment. We would, however, particularly draw attention to the fact that the designing and building of hosiery machines is especially suitable for British industry, giving as it does a first-class opportunity for selling brain and skill to advantage; catering for a potential heavy home demand for hosiery, which in some sections could only otherwise be met by imports; and consolidating world markets for machines which are likely to be in great demand abroad for many years ahead.

At the same time we must point out to the machine builders that, although some priority of labour might be given to them, the control of labour is generally coming to an end, with the possible exception of young people called into the Forces, and the remedy for insufficient production will lie largely in their own hands. They have bright long-term prospects and a good order book, and we believe that two possibilities are worthy of their consideration :

(*a*) Dispersal.

(*b*) Greater productive efficiency.

Under (*a*) the Government's policy of dispersal to the Development Areas is now well known, and already at least one well-known hosiery manufacturer has realised that labour is going to be short for years to come in the established hosiery areas and has taken his work to where workers are available. We believe that no unsurmountable difficulties stand in the way of machine production being dispersed to a certain extent also. Dealing with (*b*) we have no doubt that the machine builders are as alive as the rest of the industry to the importance of increasing P.M.H. We must say, however, that opportunities now exist for better production methods owing to the larger number of machines to be produced, and although hosiery machines are intricate and accurate, war-time experiences in producing large quantities of more difficult equipment have shown the advantages to be gained by closer attention to more adequate production planning, and a greater use of less highly skilled labour.

Obsolete Machinery : We were interested to note that 81 of the 97 firms who replied to our questionnaire about production matters expressed the opinion that obsolete machinery should be broken up and sold for scrap.

The main reason advanced for scrapping of such machinery is that, if sold, it is often put into production by people starting up with very little capital as hosiery producers, who are able to acquire the machinery because of its cheapness. Firms who started up in this way have in some cases developed into efficient, well equipped concerns. We are told, however, that in some cases, after a varying life during which the firm keeps going with the help of such expedients as price cutting and wage cutting, the business fails.. The machinery is then sold and, more often than not, is put into operation by another new entrant who shares the same fate. We understand that, although the production of all such firms operating at any one time may not be very considerable, the effect of the price and wage cutting measures which they take while trying to remain in existence unsettles the industry, leading to weak selling and a tendency to cut wages over a wider area.

We have not been able to make a detailed investigation into the position, nor do we feel able to express an opinion on the extent to which the position, as

outlined above, is contrary to the welfare of the community. The disposal of obsolete machinery in general is a problem which affects many industries and cannot be dissociated from the general attitude of the Government towards modernisation of plant, in particular with regard to taxation policy. So far as the question of scrapping hosiery machinery is concerned, the matter is one which the industry itself is better fitted to deal with. We must, however, express our opinion that much of the difficulty will disappear when arrangements in the industry are such that every hosiery manufacturer is obliged to conform to the normal rates and conditions of the industry. The latter should be ensured by the strict application of the Factories Act, which we have suggested elsewhere. The former refers to a matter which lies outside our terms of reference and we can therefore do no more than draw attention to the need for it.

CONCLUSIONS AND RECOMMENDATIONS

(*a*) There is little technical co-operation among the machine builders, and while we have not made any detailed examination of the effects of this, our impression is that its effect on the prosperity of the hosiery industry is harmful.

(*b*) There is a need for joint consultation to enable the hosiery industry, the machine building industry and the needle industry to discuss their common problems. In view of its terms of reference it is unlikely that the existing Joint Committee will prove an active force if left to itself, and more stimulus is needed. In the event of a certain amount of machinery and needle research falling within the activities of the Hosiery Research Council, the co-operation and participation of the machinery and machine needle industries should be sought.

(*c*) *We are greatly concerned that the Government have not yet made satisfactory arrangements for the encouragement and assistance of British fully fashioned stocking machine production. We strongly recommend that an immediate investigation should be made into the progress of negotiations between the Departments concerned and the hosiery machine builders, that the matter should be treated as of the highest order of priority, and that the hosiery industry should be informed with all speed of the steps decided on, whether they be positive or negative.**

(*d*) To the extent that British production cannot be stepped up to meet demand, we recommend that the Government should facilitate the procurement of suitable machinery from other sources.

(*e*) Some preference should be given to supply of machinery to British hosiery manufacturers who can show immediate need of it to develop their exports.

(*f*) Special attention needs to be given by the hosiery industry to the acquisition of ancillary machines, both to match with the installation of new knitting machines, and to provide for more efficient mechanisation of existing factory departments. In addition to the well known linking and seaming machines, a number of useful machines are in use in the U.S.A. which are not yet generally used in this country, and in the interests of efficiency British hosiery manufacturers should be permitted to import such equipment until such time as it can be produced in the United Kingdom.

(*g*) We consider it important that the machine builders should take all possible steps to increase their output, and we hope that they will make full use of the

* See the letter from the Chairman to the President of the Board of Trade on page 176.

knowledge gained during the war about planning large-scale production and utilising the latest methods of production planning, and the employment of less highly skilled labour than hitherto.

(*h*) We cannot dissociate the problem of disposal of obsolete hosiery machinery from the general problem of keeping the plant and equipment of industry generally, modern and up-to-date. We have not been able to arrive at a firm conclusion on this matter, though we are inclined to the view that Government policy on taxation relief in relation to re-equipment has been a major factor.

VI. Finance, Costings and Statistics

A. FINANCE

Capital: With few notable exceptions, the hosiery industry comprises private companies and partnerships. In the main, the finance was provided by family loans, the proprietors' savings and undrawn profits, and with the rapid growth of the industry in the last two decades it is not surprising that the smaller concerns in particular should have suffered from shortage of capital. Such deficiency, at least as regards working capital, was largely made good by bank loans and by extended credit from the spinners, while as regards new machinery the machine builders often provided credit.

It is usual for the larger concerns to own their premises and for the smaller to rent them. Machinery is either purchased outright, or acquired on hire purchase terms, but generally the former.

Taking a cross section of the industry, we find that in the immediate pre-war years fixed assets represented approximately 43% of total assets, and in 1945 they represented 33%. This reduction is mainly due to the excess of depreciation provided out of profits over the cost of replacements made. Depreciation of machinery has been provided on the basis of original cost and such provisions are generally available in cash for replacements at such prices. Stocks of raw materials, work in progress, and stocks of finished goods represent about 30% of total assets, while pre-war debtors were about 20% compared with 15% in 1945.

Owing largely to the incidence of Excess Profits Tax the accretion to capital from 1939 to 1945 would not appear to be significant, and it is therefore of importance to consider how the additional capital will be provided to meet the increased cost of machinery replacements and the increased costs of materials, wages, etc., when the industry returns to production at the pre-war volume. In the past the industry relied on banking facilities for temporary finance, but the use of bills of exchange and other similar credit devices has not generally been resorted to for many years. In addition to the consideration of the quantity of capital required it is necessary also to consider the relationship of sales to capital. This turnover/capital ratio is affected by the differing capital structures, and in particular by (*a*) whether premises are owned or not, (*b*) the type of raw material used, e.g. silk, wool, cotton or rayon, and (*c*) the form of distribution.

The experience of the cross section referred to was that in the immediate pre-war years the turnover/capital ratio was 1½ to 1, while in 1945 it was 2 to 1. With the smaller units renting their premises their ratio generally was much greater—in this connection we estimate that of the fixed assets, representing pre-war approximately 43% of total assets, about one-half may be taken as representing land and buildings.

Profits: We have reviewed the profits of a cross section of the industry and find that in the immediate pre-war years the profits earned differed materially section by section and manufacturer by manufacturer—the latter regardless of the size of the unit. Profits were adversely affected by changes in raw material prices and, particularly in the women's stocking section, by foreign competition of a most vicious character. While it must be made abundantly clear that the industry was not unprofitable, we have formed the opinion that the

profit it earned in relation to the capital employed was not large. It is not surprising therefore that the " profits standards " for the purpose of the Excess Profits Tax were less than the war year profits in many cases. From these observations two points emerge—firstly the increased profits earned in the war years 1939-1945, and secondly the fact that such increased profits have not accrued to the industry—save to the extent of 20% (less Income Tax) of Excess Profits Tax suffered at the rate of 100%.

It is appropriate here to record what we believe to be the main reasons for the increased profits earned in the war years. The primary reason must be the absence of competition, but with this there was the necessary corollary, during that period, of price control, so that the profits earned, both as regards production for Government Departments and the civilian markets, were restricted. While the amount or rate of earnings was restricted, there were other favourable factors operating which enabled such profits to be obtained at near the maximum. These may be summarised as follows, and are referred to elsewhere in this report :—

(i) Stabilised prices for raw materials.
(ii) The elimination of loss through fashion changes, multi-colours, etc.
(iii) The manufacture of larger quantities of one type with consequent improvement in production efficiency.
(iv) The quicker payment for goods and the negligible amount of loss through bad debts.
(v) The improvement in the costing methods in the industry.
(vi) The " abolition " of conventional selling prices.
(vii) The elimination of excessive costs of distribution.
(viii) Profitable sales in the export market.

It is necessary also to bear in mind the following :—

1. Changes in machine activity.
2. Changes in operative and machine efficiency.
3. The gradually rising level of costs.
4. The less discriminating nature of the buyer.

From each of these factors lessons may be learnt which in our opinion should be present in the minds of manufacturers when planning their peace-time production and programmes.

Cost : General conclusions are subject to criticism when applied to certain particular cases, and broad statements may similarly be attacked but none the less serve to make a valid point without suffering from particular reservations that otherwise tend to negative them. On this basis we would observe that prime cost (materials, direct wages and dyeing and finishing) represents approximately 80% of total cost, and the amount of non-variable overheads (factory and general)—excluding any non-variable selling expenses—represents nearly 10% of total cost. With the total conversion and selling cost representing about 50% of total cost, the non-variable overheads represent one-fifth of such cost, so the importance of the volume of production in relation to cost is evident. With the use of machinery representing substantial capital outlay—such as fully fashioned knitting frames—there is a natural desire for such to be used as fully as possible, and while it would be unwise to assume that there would be no addition to fixed overhead expenses if production were

increased, by say additional shifts, there are clearly limits within which increased production will result in reduced costs of a not unsubstantial amount. This subject is dealt with in other sections of this report.

Capital Requirements : Having considered the capital available to the industry and the profitability thereof, we next consider its capital requirements to meet the cost of rehabilitation and expansion, and the profits that may be expected to service such capital. The finance of rehabilitation is materially affected by the increased cost of machinery, estimated early in 1946 at 50% over pre-war costs. Towards the cost, funds are, or will be, available from

(*a*) the depreciation set aside out of profits ;

(*b*) the small accretion to capital during the war years (profits earned less taxation and dividends) ; and

(*c*) the refund of Excess Profits Tax at 20% less Income Tax in respect of E.P.T. charged at 100%.

In our view the industry will have sufficient cash available to finance the machinery it will be able to acquire as *replacements* during the next two to three years, and the additional tax reliefs provided under the Income Tax Act of 1945 will also help in this connection. As to working capital, however, we are of the opinion that many units may well have to have recourse to their bankers to finance increased production from existing or replacement machinery at the higher costs of production—particularly materials and wages.

Having regard to the following—

(*a*) productive improvements that will be incorporated in the new machinery,

(*b*) the competitive prices of knitted garments compared with woven,

(*c*) the anticipated substantial demand for at least a few years to come, both at home and in overseas markets,

(*d*) lower costs arising from increased production per unit,

(*e*) the hope of the relaxing of the present stringent form of price control,

(*f*) the present rates of wear and tear allowances for taxation purposes which appear to us to be adequate,

(*g*) the possibility of lower levels of taxation,

we are of the opinion that such capital will be used profitably in the full sense.

We have suggested in other parts of this report that the overall production of the industry should be increased from its pre-war dimensions by increasing the volume of exports and by the production of goods previously imported. This expansion of the industry will require further capital, most of which we think will have to be provided from outside the industry. Such capital—particularly in the women's stocking section—may well be substantial but we are of the opinion that such capital will be forthcoming either from the Money Market or one of the Government sponsored financial institutions, as we envisage, for reasons given earlier, that it will be profitably employed.

CONCLUSIONS AND RECOMMENDATIONS—PART A

(*a*) On grounds of finance we see no reason to make recommendations distinguishing between large and small units.

(*b*) We recommend that some protection be afforded to the British manufacturer against the vicious type of competition from other countries that obtained in some years prior to 1940, particularly as regards women's stockings (see also Chapter IX).

(*c*) We are of the opinion that there are sufficient cash resources within the industry to finance replacement of worn plant. We do not think that these resources will be large enough to meet the total cost of expansions which would need to be covered in the main by capital raised outside the industry.

(*d*) We believe that because of higher costs of production, especially wages and raw materials, it will be necessary for many firms to increase the amount of their working capital, possibly in many cases by negotiating bank loans.

B. COSTINGS

In December, 1936, there was issued by the then National Federation of Hosiery Manufacturers' Associations a report of its Costings Sub-Committee—the opening paragraph of which reads :—

> "There is no more urgent problem facing the Hosiery Industry to-day than that of the ascertainment of the cost of production. Many manufacturers continue to use rule-of-thumb methods by which they add to their prime cost, *i.e.*, materials and direct labour, a percentage to cover all overhead expenses and profit, and so long as their financial accounts show a balance on the right side they are content."

The report in question was recommended by the Federation to the serious consideration of members, but the outbreak of war saw little or no improvement in the industry generally. There were notable exceptions here and there, but on the whole the standard of costing technique was poor, and it was only towards the end of the war in 1944-1945 that any noticeable improvement was discernible. Few manufacturers kept records of material usage and wastage, and it was rare for the wages charged in the unit costs to be reconciled with the total wages paid for a given period. Overhead charges were seldom divided between factory overhead and general administration, and selling and distribution expenses were often lumped under the general heading of overhead.

The method of allocation of overheads to individual units is generally by reference to direct wages incurred thereon. Standard costs are rarely used in the industry. The determination of contract prices of garments made for the Ministry of Supply and selling prices of Utility garments by reference to cost has required manufacturers to consider more carefully the importance of maintaining adequate cost records, but the present standard of such records and the use to which they are put falls far short of what an efficient industry requires. Most of the yarns used are hygroscopic and contain a certain amount of moisture, and it is clearly of importance that all losses of weight should be controlled at the various stages—we are by no means satisfied that this important aspect of cost receives the care and attention it warrants.

Standard Costing and Uniform Costing : Much has been said and heard of standard costs and the word " standard " has been used in so many connections that it is perhaps of interest to appreciate just what is intended in the present context and in so doing to observe how important a part standard costs can play in the industrial life of this country.

It should first be made clear that " standard costing " is not synonymous with a " uniform system of costing " nor with the use of any of the several

uniform methods in costing although these latter may or may not be used in standard costing. The use of the word " uniform " indicates a degree of similarity or consistency of method, and implies in the examples given that the members of, or the advisers to, an industry have adopted or recommended one system such as unit costing, batch costing, process costing, etc., or one method such as, in the recovery of factory overhead, the adoption of the machine hour rate, productive labour hour rate, productive labour cost rate, etc. This important aspect of uniformity will be enlarged upon later.

Life generally is full of comparisons—odious and odorous—and it is so necessary for us to measure ourselves to judge our achievements, qualities, etc., and to do so properly there must be standards. It will at once be appreciated that the standards themselves will hardly be absolute, but to achieve their purpose they must be understood or expressed with certainty. It is in the sense of providing a yard-stick, a base, a measure or criterion, that the word " standard " is used in the present context, but the system should go further—as will be seen later—to include *inter alia* the ascertainment of actual costs and to measure such in appropriate detail against the standards. It is not proposed to deal with the different forms of standard costing or give a detailed exposition of how such a system should be installed, but rather to indicate certain of the features that are considered to be of importance in a general review of the subject.

While it is no doubt true that standard costing could be applied to most if not all industries and to the units comprised therein, it is true to say that the fewer the number of types of articles produced the easier it is to operate. The system involves the setting up of standards for each of the articles produced. Such standards should contain all the appropriate details of the weight, type and price of the raw materials used—the hours and wages of labour involved and an allocation of overheads—total or variable—depending on whether or not marginal costs are being used. The basis on which the standards are prepared is important and should clearly be borne in mind when making comparisons of actual costs therewith, e.g. they may be based on :—

(*a*) theoretical maximum capacity, or

(*b*) actual maximum capacity, or

(*c*) capacity of a given period, or

(*d*) any other similar base.

In the case of machine operations, the machine speeds should be noted and will form an important part in the ascertainment of the standard, so too will the length of the run, or in other words the quantity being manufactured without some major mechanical change.

Records should be kept of the actual usages of raw materials, waste obtained, hours worked, wages paid, quantities of articles produced, running speeds of machines, overheads incurred, and these factors appropriately tabulated can be compared item by item with the standards. Such comparison can be made by type of article or by totals at such intervals as may be determined, and the comparison will show not only the actual cost compared with the standard but in what particular it differs and by how much. It is not enough to know that the cost of an article in one period is more or less than in another; it is necessary to know the extent to which the actual differs from the standard and the reasons for the difference. If for reasons within the control of the manu-

facturer, the differences will provide the subject for immediate inquiry in the right quarter. Standards may be changed from time to time if there is a change in the base on which they are determined.

So far reference has been made to standards set up within a manufacturing unit, but clearly this technique can equally be applied by the industry for such articles of similar construction as are being made. Within the unit it is reasonable to suppose that identical methods will be used to determine both standard and actual costs, e.g., if overheads are allocated by reference to a machine hour rate that method is used in both cases. When considering the application of standard costing to an industry there should be appreciated the importance of the use of uniform systems or methods of costing. Whichever system or method is adopted it must be appropriate to the industry, but when so determined should as far as practicable be followed by all within that industry. In this connection it is clearly desirable that the same terminology should be used, and also the same analysis and classification of expenditure.

Having achieved uniformity of method, then comparison is possible and standards can be set up by the industry to provide managements with comparisons not only internal but also external, which may provoke further investigations and result in increased efficiency. The basis of calculation of these standards must be stated with clarity and certainty, thus enabling the comparison to be effective and the differences to be critically examined.

CONCLUSIONS AND RECOMMENDATIONS—PART B

(*a*) We are satisfied that there is room for improvement in the costing technique in this industry, and we consider such improvement to be vital to the efficient running of the manufacturing units, and in determining the selling policy of manufacturers. We attach considerable importance to this matter and we commend to the earnest consideration of all concerned the detailed observations contained in this section of our report.

(*b*) We strongly urge the Employers' Organisations and the Hosiery and Knitwear Council to take positive steps

(i) to encourage the use of standard costs ;

(ii) for the setting up of standard costs of a number of representative articles and the publication of such costs ;

(iii) to introduce within the different sections of the industry appropriate uniform systems of costing, terminology, analysis and classification of expenditure.

C. STATISTICS

In the years up to 1939 there were few statistics concerning the hosiery trade in particular that were available to the members of the industry, but during the 1939-1945 war much useful material was obtained by the Hosiery Control of the Board of Trade. Recently certain of this information has been made available to the trade and by Employers' Organisations to their members. Further information of a vital character will be available as a result of the proposed censuses of production and distribution. The trade should be consulted as to the information that would be of value to it and then urged to co-operate in its being obtained.

We have been considerably hampered in our investigations, not only by the lack of statistical information about the industry, but also by the considerable variations in the bases on which the figures have been compiled by different authorities, thus making comparisons difficult. We hope that the institution of the Central Statistical Office will do much to bring about a more uniform state of affairs.

CONCLUSIONS AND RECOMMENDATIONS—PART C

(*a*) We recommend—

(i) the provision of the fullest possible statistical service of the right type,

(ii) that the information should be obtained by the Board of Trade and should be tabulated and circulated with as little delay as possible,

(iii) that the fullest use is made of decentralised and sectionalised forms of organisation in providing this service,

(iv) that an appropriate panel be appointed by the Employers' Organisations or the Hosiery and Knitwear Council to ensure as far as possible that proper interpretations of the statistics are made and conveyed to all concerned.

(*b*) We attach great importance to the prompt publication of statistics, and have only refrained from setting out in detail those features we consider necessary because of the recent reports on proposed censuses of production and distribution, which have so fully covered the field, and the information already being made available to the industry.

VII. Labour

THE Hosiery Industry has been an expanding one between the two World Wars and the labour force rose steadily from 1923 onwards as is shown in the table below :—

TABLE 32

ESTIMATED NUMBERS OF PERSONS INSURED AGAINST UNEMPLOYMENT IN GREAT BRITAIN AT JULY IN EACH OF THE YEARS 1923 TO 1945, CLASSIFIED AS BELONGING TO THE HOSIERY INDUSTRY

(*Source :* Ministry of Labour)

YEAR	MALES		FEMALES		TOTAL
	AGED 14 AND 15 YEARS*	AGED 16 AND UNDER 65 YEARS	AGED 14 AND 15 YEARS*	AGED 16 AND UNDER 65 YEARS†	
1923		18,580		69,150	87,730
1924		19,440		72,200	91,640
1925		21,180		73,970	95,150
1926		20,090		74,950	95,040
1927		21,300		77,670	98,970
1928		21,270		80,970	102,240
1929		22,060		83,180	105,240
1930		23,440		84,030	107,470
1931		23,600		88,100	111,700
1932		25,100		88,610	113,710
1933		25,130		88,370	113,500
1934		26,330		90,660	116,990
1935	1,790	25,930	11,760	89,040	128,520
1936	1,970	26,560	12,630	91,430	132,590
1937	2,050	27,030	11,890	92,380	133,350
1938	1,570	26,760	10,840	91,470	130,640
1939	1,790	27,700	11,270	92,570	133,330
1940	2,400	24,550	11,760	94,520	133,230
‡1941	1,680	19,620	8,160	73,610	103,070
1942	1,110	13,540	5,750	52,430	72,830
1943	1,080	11,550	5,520	46,590	64,740
1944	1,090	10,880	4,910	40,960	57,840
1945	1,110	11,170	5,520	42,280	60,080

* Boys and girls aged 14 and 15 years were not insurable under the Unemployment Insurance Acts prior to September, 1934.

† The figures for 1940 and later years relate to women aged 16 and under 60 years, as women aged 60 and under 65 ceased to be insurable under the Unemployment Insurance Acts at 1st July, 1940.

‡ The figures for 1940 and those for earlier years exclude, and the figures for 1941 and those for later years include non-manual workers with a rate of remuneration exceeding £250 but not exceeding £420 a year who first became insurable in September, 1940.

During the war, the industry released slightly more than half its operatives for the Services and munition work, and in some of the main centres, particularly Leicester and Nottingham, manufacturers will be handicapped considerably in regaining the number of operatives they had in 1939 owing to the counter-attractions offered by other forms of employment, particularly those which expanded during the war and which are likely to remain expanded.

The peace-time labour force was made up approximately as follows :—

Women	69%
Men	21%
Girls under 16	9%
Boys under 16	1%

During the war these percentages remained almost unaltered, the main change being an increase in the proportion of boys and the loss of men.

The degree of skill required is high in most operations. Training periods are seldom less than six months, and have been as long as four years for certain types of knitting, though the use of modern training methods should reduce these periods very considerably. Low labour turnover is important if training periods are lengthy, and we would therefore stress the importance of careful recruitment followed by careful training. It seems probable that the hosiery industry will always rely mainly on women for its labour force, because of the fineness of so much of the work, and the need for nimble fingers in making-up processes such as linking and seaming.

It is noteworthy that, in common with other textile industries, the hosiery industry retains a large proportion of its women workers after marriage. This applies more particularly to the long established centres of Leicester and Hinckley.

Level of Employment : The hosiery industry has had the deserved reputation of providing a higher level of employment than many industries, though even so, a substantial number of hosiery operatives were unemployed before the war, and a more substantial number were seriously under-employed, working short hours and part weeks. The effect of this does not appear in official statistics, but it must have been felt severely by the operatives. It is our opinion that much can be done by better production planning and better utilisation of labour to obviate this in the future. The following table sets out the position for the period 1930-1939.

TABLE 33

UNEMPLOYMENT IN THE HOSIERY INDUSTRY COMPARED WITH UNEMPLOYMENT IN ALL INDUSTRIES 1930-1939

(*Source :* Statistical Abstract of the United Kingdom and Ministry of Labour)

YEAR	NUMBER OF HOSIERY OPERATIVES INSURED AGAINST UNEMPLOY-MENT (ANNUAL AVERAGE)*	PERCENTAGE OF INSURED HOSIERY OPERATIVES UNEMPLOYED AT THE END OF JANUARY EACH YEAR	PERCENTAGE OF ALL INSURED WORKERS UNEMPLOYED AT THE END OF JANUARY EACH YEAR	PERCENTAGE OF INSURED HOSIERY OPERATIVES UNEMPLOYED AT THE END OF JULY EACH YEAR	PERCENTAGE OF ALL INSURED WORKERS UNEMPLOYED AT THE END OF JULY EACH YEAR
1930	107,470	9·1	12·4	15·9	16·7
1931	111,700	20·0	21·1	21·6	21·9
1932	113,710	12·4	22·2	14·5	22·8
1933	113,500	15·0	23·0	10·5	19·5
1934	116,990	9·3	18·6	12·4	16·7
1935	114,970	17·2	17·6	10·1	15·2
1936	117,990	11·1	16·2	7·8	12·4
1937	119,410	9·4	12·4	6·8	10·1
1938	118,230	14·2	13·2	11·1	12·9
1939	120,270	10·8	14·2	4·9	9·0

* The difference between these figures from 1935 onwards and those given in Table 32 is due to the fact that the total figures in Table 32 include numbers of Juveniles under 16 which are not included in this table.

It will be observed that there was a considerable seasonal fluctuation in employment in the hosiery industry amounting to several thousands (over 8,000 more workers were unemployed in January 1935 than in July of that year). The seasonal fluctuation was not, however, regularly in one direction: from 1930 to 1932 and in 1934 unemployment was higher in summer than winter, while in 1933 and from 1935 to 1939 the winter was the worst period.

Productivity: During the war there has been a rise in productivity per worker due principally to full-time working, long production runs on simplified garments, and the manufacture of heavier types of garments for the Services. The average consumption of raw materials per productive worker is shown in the table below.

TABLE 34

CONSUMPTION OF YARN PER PRODUCTIVE WORKER

(*Source* :—Import Duties Act Enquiry 1937 and Board of Trade)

YEAR	NO. OF WORKERS *	YARN CONSUMED: 000's LBS.	CONSUMPTION PER HEAD: LBS.
1935	105,622	146·9	1,390
1937	109,747	158·6	1,445
1945	58,961†	95·5	1,620

* Average for the year. † Includes part-time operatives on the basis that 2 part-time operatives are counted as 1 full time operative.

In considering the war-time increase due allowance must be made for the fact that many of the younger workers were transferred to other forms of war production, though against this it will be appreciated that for most of 1945 more hours per week were worked than was usual in peace-time.

Future Labour Requirements: We wish to refer in this chapter to a most important labour problem facing the hosiery industry—the anticipated expansion of the fine gauge fully fashioned stocking section. We have estimated in Chapter III that about 14,000 workers will be needed over and above the number now employed on fully fashioned stocking production. Of these 14,000 about 3,000 will be men for knitting, and the remainder mainly women for making-up operations. (These figures do not take into account the effect of the expansion of stocking output on the dyeing and finishing industry, which employs mainly men.) We are doubtful about the possibility of recruiting the necessary workers in the traditional centres except by " poaching " from firms in other sections of the trade. This, however, would cause grave dislocation, and accordingly it may be necessary for some at least of the new fully fashioned stocking factories to be located outside the traditional centres.

Location alone, however, will not solve the problem. It will be necessary to organise comprehensive training arrangements as mentioned in Chapter X. Moreover, new entrants to the trade will need to be assured of some degree of continuing employment following on the intensive training which will need to be given to them, and this aspect requires attention. We are precluded by our terms of reference from making specific recommendations on this subject, but we think that exploration might be useful.

It is difficult in this transition period to obtain an accurate estimate of the total labour needs of the hosiery industry over the next few years. It has been

shown in Table 32 that the 1945 total had been reduced to about 46% of pre-war (1938) level, and, on a basis of return to that level, an increase of about 117% or about 70,000 workers would be required. This percentage coincides almost exactly with the figures obtained from the questionnaire mentioned in Part G of Chapter III. Proportionate increases would be required in clerical and supervisory staffs.

Several important factors require consideration in attempting to arrive at a final figure of increase. These are :—

(*a*) Added productive efficiency as compared with pre-war.

(*b*) Increased volume of exports as compared with pre-war.

(*c*) Increased volume of home consumption arising from full employment.

In our view these factors will offset themselves approximately over the next two years, and will justify the view that a further 60/70,000 workers, as compared with those employed in 1945, will be required to meet estimated requirements of hosiery products.

There is at present a considerable lack of balance between the numbers of men and the numbers of women returning to the industry. In pre-war years, as shown in Table 32, there were about three and a half times as many women in the industry as men. The present rates of return, however, are in the ratio of approximately three men to two women. Figures of war-time employment are given below.

TABLE 35

NUMBERS OF PERSONS EMPLOYED FULL TIME IN THE HOSIERY INDUSTRY IN THE LATER STAGES OF THE WAR AND AFTER

(*Source* :—Board of Trade)

DATE	MEN	WOMEN	JUVENILES	TOTAL
3rd July, 1944	10,966	39,947	1,652	52,565
2nd July, 1945	11,467	40,648	2,994	55,109
3rd Sept., 1945	11,765	41,926	3,534	57,225
5th Nov., 1945	12,325	44,457	3,472	60,254
31st Dec., 1945	13,194	44,951	3,607	61,752
4th Mar., 1946	14,937	46,074	3,801	64,812
29th Apr., 1946	16,637	47,155	4,246	68,038

The rate of return of operatives to the industry is as follows.

TABLE 36

NUMBERS OF OPERATIVES RETURNING TO THE HOSIERY INDUSTRY

(*Source* :—Board of Trade)

PERIOD	NUMBERS RETURNING IN PERIOD		RATE OF RETURN PER 4 WEEKS	
	MEN	WOMEN	MEN	WOMEN
2nd July, 1945—2nd Sept., 1945	298	1,278	132	567
3rd Sept., 1945—4th Nov., 1945	560	2,531	249	1,125
5th Nov., 1945—30th Dec., 1945	869	494	434	247
31st Dec., 1945—3rd Mar., 1946	1,743	1,123	775	499
4th Mar., 1946—28th Apr., 1946	1,700	1,081	850	540

We have suggested that the probable peace-time labour force will need to be about 130,000. On the pre-war proportion of men, women and juveniles this number would be made up as follows :—

Men	26,600	20.5%
Women	90,000	69.2%
Juveniles	13,400	10.3%
	130,000	100%

Excluding juveniles the industry will need to recruit nearly 10,000 men and 43,000 women in excess of the numbers employed at the end of April, 1946, if the target of 130,000 is to be reached. (Indeed, this is a conservative estimate, since there is some doubt whether it will be possible to recruit as many juveniles as before the war now that the school-leaving age is being raised.) On the basis of a continuing return of operatives at the March/April, 1946, rate the male labour force would be restored to pre-war levels by the end of March, 1947, while the female labour force would not be restored until *December 1952* ! Putting this in another way, by the time the male labour force reaches peace-time size there will be a deficiency of 36,500 women operatives.

These calculations leave out of account certain factors which will have some effect on the position. These are :—

(*a*) The lifting of the Essential Work Order from most industries including hosiery.

(*b*) The reduction in the rate of demobilisation from now on.

(*c*) The return of married women workers to domestic life.

(*d*) The tendency for women workers to prefer non-manual work such as retail distribution, etc.

It is clear that very special steps will have to be taken to combat this threatened lack of balance.

Some firms have already made arrangements to employ immobile women workers in outlying villages by setting up dispersal units in the villages. We are of the opinion that a large-scale extension of this practice will be necessary if the industry is to continue to operate in the traditional centres. We must make it clear, however, that we are totally opposed to any form of homeworking as a permanent policy, and we advocate dispersal units on the understanding that premises will be opened, by the firms concerned, in which the local women will be employed at the normal rates of pay and under good conditions. We recognise that this method of working will be slightly more expensive due to transport costs. On the other hand, working below capacity or employing men at men's wage rates on women's work is likely to be still more expensive.

VIII. Buildings and Location

Buildings : The standard of buildings in the hosiery industry is not as high as is desirable. This is due to two main causes which are interconnected. Firstly, the industry is traditionally one of family businesses which began in a small way in premises which in some cases were designed originally for quite a different purpose. Secondly, the industry has been expanding steadily since the 1914-18 war, and in many cases, this has led to piecemeal additions to buildings as needed. The result is that it is difficult in some factories to achieve an effective production layout, and handling costs, etc., are higher than would be the case in a more suitable building. Some indication of the position is given in the following tables.

TABLE 37

AREA OF FACTORY SPACE BY TYPE AND DATE OF CONSTRUCTION

(*Source :*—Factory Control, Board of Trade)

DATE OF CONSTRUCTION	MULTI-STOREY		SINGLE-STOREY	
	AREA IN SQ. FT.	% OF TOTAL	AREA IN SQ. FT.	% OF TOTAL
BEFORE 1900	3,718,000	25	834,000	5
AFTER 1900	7,067,000	47	3,440,000	23

TABLE 38

NUMBER OF BUILDINGS BY TYPE AND DATE OF CONSTRUCTION

(*Source :*—Factory Control, Board of Trade)

DATE OF CONSTRUCTION	MULTI-STOREY		SINGLE-STOREY	
	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL
BEFORE 1900	213	30	55	8
AFTER 1900	237	34	197	28

The hosiery industry compares favourably with other branches of the textile industry as regards the age of buildings, though the above tables tend to paint an optimistic picture in that a building of which more than 50% of the floor area has been constructed since 1900 is regarded as built after 1900. Thus although 70% of the floor area and 62% of the number of buildings were built mainly after 1900, some of these will be on unsuitable sites, and will often be no more than adaptations of a pre-1900 basic plan. Accordingly therefore the degree of rebuilding required, especially complete rebuilding to a different plan and on a different site, is greater than the tables would suggest.

We have mentioned earlier that there will need to be a substantial building programme for the fully fashioned stocking section of the industry if pre-war imports are to be replaced by home production. We certainly regard such building as most urgent, but we would not like to see rebuilding in other sections of the industry held back on that account. It is important that no time is lost

by manufacturers in making their plant as efficient as possible, and to this end we hope no obstacles will be put in their way as regards rebuilding by the Government Departments concerned.

Location : We have mentioned in Chapter III that there is likely to be a serious shortage of operatives, especially women, in the traditional hosiery centres for some years. In particular Leicester and Nottingham are likely to be towns with an acute labour shortage. The reasons for this are complex, and we do not propose to examine them in detail. One factor which we cannot ignore, however, is the war-time influx of newer industries. It would be unwise to assume that these new industries will not remain in Leicestershire and Nottinghamshire in an expanded form. Moreover, the war-time concentrated industries, mainly the Lace industry in Nottingham and the Boot and Shoe industry in Leicester, will have a similar problem.

It is important constantly to bear in mind that in 1944, 80% by value of the total gross output of the hosiery industry came from Leicestershire and Nottinghamshire. This problem of labour shortage has already engaged the attention of the Board of Trade, and in April this year the Parliamentary Secretary wrote to the Leicester & District Hosiery Manufacturers' Association, Ltd., as follows :—

> " While there can be no complete or immediate solution to the labour difficulties of Leicester . . . it has never been and will not be any part of the Board of Trade's location of industry policy to attempt to force any Leicester hosiery manufacturer . . . to leave the city ; . . . we shall continue to do all that we can to see that premises requisitioned from hosiery firms are restored as quickly as possible to their rightful owners, and give them all the assistance in our power to resume production, though we cannot guarantee to any manufacturer whose premises are returned, that the labour he requires will be available in Leicester . . . we shall maintain our policy of not assisting either the entry of new businesses into Leicester, or the expansion of those already located in the city. No facilities of any kind will be given to the former ; and we shall assist the expansion of existing Leicester firms only if we are satisfied in each case that the expansion is vital to the national interest or that it is impossible for the additional production to be carried on in an easier labour area . . ."

We have quoted this letter at some length because we consider it sets out the gravity of the situation in Leicester most forcefully. (We understand the position in Nottingham is little better.) For some years to come at least, labour is going to be the most scarce factor of production, and current Government policy tends to require industry to go to labour and not, as before the war, labour to seek out industry.

Accordingly we recommend that manufacturers should give very careful consideration to the most suitable area in which to locate any new plant, and be prepared to expand in areas outside the traditional hosiery centres. While we do not wish to name actual areas as suitable (advice on this can be obtained from the appropriate Government Departments), we urge hosiery manufacturers to bear in mind the inducements and facilities offered by the Government and Local Authorities to firms setting up plants in Development Areas.

Hosiery will continue to be an important Midland industry, but we doubt whether it will again employ such a high proportion of Leicester and Nottingham workers as before the war, and we feel it is our duty to put these doubts on record.

In our consideration of the question of location we have been constantly reminded of the absence of national negotiating machinery for wages and wage

rates within the hosiery industry. Consideration of wages and wage negotiating machinery is outside our terms of reference, and we have not occupied ourselves with this question. We do feel it necessary, however, to refer in passing to the variation in rates and wages in different areas since, apart from the effect of such variations on the manufacturing policies of different firms, they may obviously have a considerable bearing on the location of new projects.

We are far from suggesting that expansion of the hosiery industry into new areas, which we have indicated as a likely development, would necessarily lead to the factories in the new areas paying unduly low wages. Certainly this would not be true of many firms ; but we cannot ignore the possibility that this might occur in some cases. It seems to us from what we have heard that there is good reason to doubt the desirability of the variation in hosiery wage levels between different areas and firms, and we suggest that the position be reviewed by the appropriate authorities.

IX. The Distribution of Hosiery Goods

A. CHANNELS AND FORMS OF DISTRIBUTION

THE main channels of distribution are :

1. Manufacturer to
   (*a*) Wholesaler.
   (*b*) Factor, Buying Agent or Commission Merchant.
   (*c*) Chain Store.
   (*d*) Departmental Store.
   (*e*) Retailer.
   (*f*) Public.
   (*g*) Export.

2. Wholesaler to
   (*a*) Departmental Store.
   (*b*) Retailer.
   (*c*) Export.

3. Factor, Buying Agent or Commission Merchant to
   (*a*) Chain Store.
   (*b*) Departmental Store.
   (*c*) Retailer.
   (*d*) Export.

4. Chain Store, Departmental Store or Retailer to
   (*a*) Public.

It should be noted here that some of the supplies of the wholesalers, factors, chain stores and some departmental stores have in the past been obtained from abroad.

Evidence has been taken from representatives of each of the different types of distributors, except the factors, and we were much impressed by the frank manner in which they admitted the shortcomings of pre-war practices and by the earnest desire they evinced to avoid them in the future, and to provide against a repetition of conditions which were not in the best interests of the community. The distributors are clearly alive to the importance of providing the effective link between production and consumption. They fully realise that the reasonable demands of the public must effectually be translated into terms of production, and that the difference between the producer's price and that required from the public should depend upon the cost of, and appropriate reward for, the services necessarily performed by the distributor.

The hosiery industry comprises large, medium and many small producers to all of whom the type and size of individual orders is of paramount importance, particularly as regards costs and the regular employment of the workpeople engaged. The small producers in particular look to the larger buyers for an outlet for their goods, and therefore in the main sell either to wholesalers or chain stores. They have not the selling organisation which would be needed to serve the many thousands of retailers in the country, and the cost would be

prohibitive having regard to the size of orders they would obtain. Several large producers and a number of smaller firms, particularly in Scotland, who make high-class outerwear and underwear sell direct to retailers, but generally speaking sales of all types, except women's branded stockings, are to wholesalers, factors and chain stores.

We now turn to an examination of the main forms of distribution outlined above, including the Co-operative movement from whom we also took evidence.

Wholesalers : As a body the wholesalers are represented by the Wholesale Textile Association and evidence was taken from some of its leading members and its officers. This Association is clearly alive to the problems of the future and the criticisms made against its past record, and has fully and, in our opinion, fairly stated its case in its " Third and Final Report issued by the Post-War Reconstruction Committee and adopted by the Council of the Association on 12th June, 1945." The Association is evidently making a genuine attempt to bring the whole of its members into line with its more efficient members. The passages quoted herein under the heading " *Wholesalers* " are from the report in question.

To illustrate our remarks as to the re-orientation we quote :

> " The Committee are of opinion that if the wholesale trade is to maintain its rightful place in the national economic machine in the post-war era, thus assuring to itself an adequate measure of prosperity, it must adopt, both individually and as a trade, a more progressive outlook in the future. The whole machinery of wholesale distribution will need to be completely overhauled in order to adapt it to modern trends."

As to the functions of the wholesaler the report states :

> " It is the function of the wholesaler to keep in touch with all the producing markets of the world and to inspect the goods that are being produced in these markets. Over a long period of years, wholesalers have gained a special knowledge of the requirements of the retail trade and, having these requirements in mind, must view the products of all manufacturers disregarding those that do not come up to standard, as regards fashion, quality, make or finish, and selecting only the best for subsequent distribution to the retail trade . . . . "
>
> " Having taken delivery of the goods from the manufacturer, the wholesaler then becomes a stock-keeper for the manufacturer, who in the main, is not in a position to make goods for stock and who has, generally speaking, no facilities for so doing. The term " stock-keeping " savours of something simple and seems to imply the mere minding of goods until such time as they are required, but in reality, stock-keeping is an art and has been brought to a high state of perfection by wholesalers as a result of a very long trading experience. Stock-keeping is not the function of the manufacturer and, indeed, can only be an added embarrassment not only to him but to the country as a whole. Stock-keeping is the function of the wholesaler and from an economic point of view it is best that it should be so.
>
> In the same way that the wholesaler acts as stock-keeper for the manufacturer, so he also acts in a similar capacity for the retailer who is enabled to draw upon the wholesaler's stocks as and when required, and in whatever quantity . . . . "
>
> " Another function performed by the wholesaler is akin to that of banker, and in this connection, it is seldom realised the extent to which the wholesaler finances the retail trade by the credit that he allows to his customer. Generally speaking, the wholesaler pays prompt cash for his goods but offers liberal credit to his customers."

The functions outlined above are in our view those which should be performed, and it is only by so doing that the wholesaler will retain his place in the field of the distribution of hosiery and knitwear. Accepting, as we do, the fact that the small retailer fulfils a useful purpose in our national economy, then the source of supply to such a retailer can only be provided, in the most economical way, by the wholesaler who breaks bulk and sells the retailer many types of goods of which knitwear is but one in a single order or delivery.

We were assured that the costs of rendering the services referred to were not unreasonable, and compared not unfavourably with the selling and appropriate attendant costs of those manufacturers selling direct to the retailers, but we have not examined this aspect in detail. We were informed that there was in fact little, if any, extra cost due to additional handling and additional carriage, and it was pointed out to us that it is customary for a wholesaler to send together various types of textile goods, of which knitted goods are only one, when dispatching to a retailer.

In our view the services rendered to the manufacturers by many wholesalers in the pre-war years fell far short of those that could reasonably be expected of them and we quote :

> "There is no doubt that the largest measure of criticism of the policy of the wholesale trade in pre-war days was in respect of its buying methods and there is equally no doubt that to a large extent this criticism was justified . . . . "
>
> "There is no question that many buyers failed to place seasonal orders sufficiently in advance to enable manufacturers to obtain continuity of production . . . ."
>
> " In other cases, buyers, in their anxiety to keep all manufacturers ' sweet,' dissipated their buying power by spreading their buying over too large a number of manufacturers."

We are not wholly satisfied that the reason given in the last statement is correct; there was undoubtedly a playing off of one manufacturer against another, with a result that might well have been achieved by placing the one order with a single manufacturer at a lower cost justified by the additional production.

As to the future buying policy the report states :

> " Turning to the subject of post-war policy, it should firstly be emphasised that the primary concern of manufacturers is continuity of production so as to avoid periods of working at high pressure interspersed with periods of slackness. This will and must be the goal of every manufacturer in the future; indeed, the indications are that the employment policy of the Government in the post-war period will be such as to prevent producers working alternate periods of short-time and over-time, so as to provide workers with a guaranteed working week to obviate unemployment. Whether or not this can be accomplished is not a matter for discussion here, but the fact remains that every manufacturer in the interests of economic working will strive to attain continuity of production. If this is accepted, it follows, as a natural consequence, that if the wholesale trade is to maintain the goodwill of the producing section of the industry it will have so to arrange its buying policy to enable the manufacturers to obtain the desired result. Unless this is done, it is obvious that manufacturers will seek other ways and means of accomplishing their objective."

We also agree with the suggestion that there should be :

(*a*) Planned production and distribution.

(*b*) Concentration of purchases.

(*c*) Concentration of ranges of goods.

The volume of sales by wholesalers has been materially affected by the advent of the chain stores, and the proportion of goods delivered by the wholesaler (excluding the manufacturer/wholesaler) to the retailer is much less than previously, but there is still a range of goods and a class of customers where his functions are necessary.

If those functions are properly and necessarily performed then there is clearly a justification for including the cost of performing those services, and a reasonable reward therefor, in the price to the consumer of the goods so distributed.

Factors, Buying Agents and Commission Merchants : Under this heading are included various types of quasi-wholesalers. Many large retailers, including those with multiple shops, and departmental stores obtain their goods through a central buying organisation which performs many of the services of a wholesaler, but differs by reason of the fact that such establishments need no selling organisations and in many cases are not required to break bulk. It is not surprising therefore that the margin included in the ultimate selling price to cover their distribution costs is less than that of the wholesaler. The margin of such factors and buying agents varies considerably, some business being effected with a margin as low as 5% on selling price and, generally speaking, it is well below that taken by the wholesaler on his selling price.

It is quite clear that such distributors perform a useful function in the distribution of hosiery and knitwear, but the same cannot be said of some " Commission Merchants " who sell against ranges of samples obtained from manufacturers, and whose orders are often of such a size and at such frequent intervals as to make their organisation little more than a mailing office for some retailers.

Chain Stores : A substantial volume of knitted goods is sold to the public through chain stores, and we are informed—and accept it as a fact—that a substantial part of the nation's demand for such goods is met by the types, sizes and price range of the goods sold in this way. Evidence was taken from two representative types of this form of trading and we were much impressed by the methods adopted to correlate buying and selling. We believe that such methods are also adopted by some wholesalers and buying agents, and we cannot stress too strongly the need for relating the widest and most efficient form of selling with the manufacture of the right kind of goods at a fair price.

From the point of production the chain stores, like certain wholesalers, are able to, and do, place bulk orders of such a size as to ensure to manufacturers, at the commencement of a season, such a volume of production as will enable them to plan their labour and yarn requirements. We were assured in categorical terms by the representatives of two large organisations that there was no question of manufacturers acting as " tied houses " to the stores ; rather was this feature deprecated, as it was felt that manufacturers would lose their sense of originality and independence. As regards the latter we were informed that not more than 60% of the capacity of any one manufacturer is normally required or taken from him. These chain stores too are interested to see that the goods conform to reasonable standards of make, that the right type of yarn is used, that the colours are limited to a reasonable range, and generally in the efficiency of their suppliers, to the extent that research in certain directions is undertaken, and the results made available to the manufacturer. Over the range of goods dealt with by the chain stores there is little doubt that they do, with the " full " wholesaler, place orders of sufficient size to ensure a productive flow of goods under the best conditions.

Turning now to their functions *vis-a-vis* the public it is noted that they do not pretend to cover the whole range of the public's requirements. This can best be illustrated as under—

(*a*) *Area covered.* Generally speaking shops are only established in areas where a population of some 10,000 persons is housed in a reasonably sized area.

(*b*) *Price range.* Goods are sold at prices limited by certain notional price ceilings and this feature limits the choice of quality, design, pattern and colour, particularly so in regard to knitted outerwear.

(*c*) *Sizes.* The range of sizes of goods sold is strictly limited.

(*d*) *Service.* Goods are sold over the counter direct from the display shelves against cash. No delivery of goods is undertaken and no sales are made on credit terms.

It is clear that this form of trading makes less provision for people living in villages and rural areas than is done by the local retailers in those areas, who would normally obtain their supplies from wholesalers. This is only partly offset by the tendency for these people to make periodical shopping expeditions to neighbouring towns, and in this respect the wholesaler/retailer method of distribution provides a service to the public which is not given by the chain stores. The fact remains, however, that a substantial part of the public's needs and requirements of hosiery and knitwear has been satisfied by chain store distribution, at a cost which compared favourably with certain other retailers, though admittedly people who need sizes, qualities, patterns or colours outside the fixed ranges are not catered for at all.

We have discussed with most of the distributors the question of selling to certain conventional prices, and the extent to which qualities were varied with variation of production costs to permit sale at these prices. We were particularly interested in the intentions of the chain stores on this point. Their representatives informed us in unequivocal terms that, although similar goods of different costs were often sold at one price, an increase in the cost of production (e.g. increased raw material or wages costs) which increased their buying prices would not lead to their requesting a reduction in quality to enable them to sell the goods at the old price; rather would the quality be held, or even improved, and the goods sold in the next higher price range. This we regard as of great importance, and strongly deprecate the subordinating of quality to price—which we are satisfied did take place in certain cases in pre-war trading.

In the main, the chain stores buy direct from the manufacturers but in certain cases they employ buying agents, and, for the types, qualities and ranges of goods they sell, we feel they operate efficiently and perform a useful service to the community.

Departmental Stores : In the main these stores obtain their goods through buying agents or direct from manufacturers—the range, etc., of the goods they sell is usually complete and thus with the small retailer they cover the entire hosiery and knitwear needs of the public. They are usually situated in the cities and large towns, and their costs are probably higher than those of the average retailer, but they compete effectively with both the chain stores and the other retailers because of the range and service they give as compared with the former, and as compared with the latter because of the low buying cost of goods, due to the placing of larger orders with their suppliers. From the evidence given to us by the representatives of this form of trading we were satisfied that they were fully alive to the problems of the distribution of hosiery and knitwear at fair prices.

Retailers : Apart from the two forms of retail distribution previously referred to, there remains the most numerous group comprising retail establishments of

varying size up and down the country in cities, towns and villages. They provide a service as complete, in many cases, as the departmental stores, and in the main obtain their supplies from the wholesaler, though some obtain high class underwear and outerwear direct from some of the manufacturers who cater for this trade.

Evidence was taken from trade representatives who stressed the service given by their members to the public, but we were not wholly impressed as to their appreciation of the importance of integrating their demands into the general organisation of production and distribution. One group was solely concerned to have the widest possible range regardless of cost, and to provide service of such a character as would satisfy the most discriminating customer. This approach was not shared by other groups we saw, indeed far from it, but it exists and, as affecting hosiery and knitwear, we regard it as of some importance in illustrating the problems involved in the rationalisation of distribution.

Co-operative Trading : No review of distribution would be complete without reference to this important method of serving the public. We took evidence from representatives of the various forms of trading, and have little comment to make other than to say that the Co-operative movement is clearly alive to the problems involved, which we have outlined herein. We were informed that the retail Co-operative Societies were not tied to the C.W.S., Ltd., and, in fact, bought largely from sources (mainly wholesalers) other than the C.W.S., Ltd.

Other forms of trading include :—

(*a*) Mail order trading by sales through the post of goods advertised by catalogues, price lists or in newspapers, etc.

(*b*) The sale by some few wholesalers to the public on a " card " introduction from a retailer (the customer's-customer).

(*c*) Club trading, check trading and the like.

(*d*) The distribution of hosiery and knitwear as consideration for prizes, coupons, etc.

(*e*) The sale of hosiery and knitwear by tallymen.

We have not considered it necessary to make a detailed examination of these methods.

B. CONTINUITY OF PRODUCTION, STANDARDS, TRADING CONDUCT AND QUALITY QUESTIONS

Small orders : From the evidence we have considered there seems no doubt that, during the inter-war years, the productive efficiency of many hosiery manufacturers was adversely affected by the increasing tendency of many distributors to order small quantities of diverse ranges of goods. We understand that this tendency was not peculiar to the hosiery trade, nor was the practice adopted by all distributors. Some large organisations ordered in bulk and profited thereby in the cost and value of the goods they obtained. Also, some manufacturers undertook the wholesaling of their own products and often backed this arrangement by substantial advertising programmes. The exact amount of sales covered by small orders is not easy to determine, not only because of the lack of statistical information, but also because the economic size of an order is

dependent both on the size of the manufacturer who receives it and on the type of garment. For example, in the sale of high-priced outerwear the factors of "exclusiveness" and "fashion" figure largely, and no prudent distributor can be expected to carry substantial amounts with their attendant risks of "dead" stock.

We are nevertheless satisfied that "small ordering" was one of the major problems of the hosiery industry in the years before the war. The industry would be most unwise if it failed to use the present period of a seller's market to concert measures for preventing or minimising the recurrence of this disability, when productive capacity more nearly balances the demand. The manufacturer, the distributor and the consumer all suffer in differing degree from the increase in costs and reduction in efficiency caused by small ordering. In general the manufacturer suffers most, and it is from the hosiery industry that the initiative for improvement should come. We believe that many manufacturers appreciate this and have laid their individual plans accordingly. For example, as we have mentioned in Chapter III, Part G, 25% of the manufacturers who replied to our questionnaire intend to make smaller ranges of goods than pre-war, and 34% intend to restrict the number of styles they offer in each of the ranges they make.

It will be difficult, however, for most individual manufacturers to resist the pressure for an excessive number of new lines from the distributive trade which will inevitably tend to occur when the selling position weakens. We do not intend this remark as a general criticism of either manufacturers or distributors, but rather as relating to the effect of economic necessity on individual action. Co-operative action between manufacturers themselves, and also between the manufacturing industry and the distributive trade, is essential. The representatives of the distributive trade whom we met were unanimously in favour of this, and we are confident that manufacturers as a whole will not be less forward in recognising its value.

For the purpose mentioned in the preceding paragraph we recommend the formation of a voluntary Standing Committee composed of representatives of the various sections of the hosiery industry, representatives of the various forms of distributive trading and representatives of the consumer. The work of this committee would be concerned mainly with the consideration of methods of correlating ordering with continuity of production. We refer to it in more detail later, and now turn to examine the various influences which have caused difficulty in the past.

Small ordering was due to many causes, the following being prominent :—

(*a*) The division of their business by distributors among a number of manufacturers which was excessive in relation to the total amount of goods ordered. While this practice was not confined to wholesalers, it was most serious when coming from members of the wholesale trade, on whom many manufacturers were dependent for orders permitting economic production. As we have shown earlier, the Wholesale Textile Association are alive to the need for improvement here, and the matter could profitably be considered by the joint committee we have suggested.

(*b*) Some firms trading as wholesalers had a very small annual turnover and were therefore in no position to place substantial orders.

(*c*) Bad trading conditions encouraged a reluctance to carry stocks and break bulk which is the wholesaler's proper function, and in many cases goods of various types were ordered in small lots at frequent intervals.

(*d*) In their efforts to increase their business and show a profit, distributors, both wholesale and retail, made continual efforts to obtain "something different," with the result that the manufacturers were continually being asked for new styles, patterns and colours. Some distributors called for quantities spread over large ranges of styles, patterns and colours with a view to re-ordering those which proved most successful, and in their search for variety and keen prices approached numbers of manufacturers out of all proportion to the total business involved. Some manufacturers, spurred on by the necessity for keeping their machinery in operation, produced and offered wide ranges of patterns and colours in small quantities, hoping to obtain further business on the lines which sold successfully. There is little reason to suppose that all these efforts resulted in the sale of a larger total quantity of hosiery than would otherwise have been required, but the total costs of production and distribution were certainly higher than necessary owing to the diversification of orders.

These practices were not followed by all distributors. Some of the larger wholesalers and chain stores pursued policies calculated to assist economic production, and, as we have shown earlier, almost all the distributive trade organisations we have met recognise the necessity for planned correlation of ordering with continuous production. There is, for example, general agreement that the ranges of patterns and styles for half hose and knitted outerwear, and the range of colours for stockings and underwear were much too wide before the war. There is also general agreement that joint consultation between the hosiery and distributive trades is a necessary measure for avoiding the recurrence of such excesses by agreement on ranges of styles, patterns and colours for each season. We agree with this conclusion and have in mind the excellent work done by the British Colour Council, who should be closely consulted on matters concerning colour ranges. At the same time we must point out that a good deal depends on the foresight of manufacturers. If a manufacturer does not charge the economic price for small orders, possibly owing to lack of a full appreciation of costs, the distributor may well seek the flexibility gained by repeating small orders at short intervals in preference to the more stable and, to him, more risky system of bulk ordering. It is however no easy matter for a manufacturer to fix economic prices in the absence of an accurate system of costing, and the withholding of wholesale prices on orders which fail to reach an agreed minimum level may well be the best solution.

Another factor which had a serious adverse effect both on manufacturing costs and on the position of hosiery workers was seasonal fluctuation of the level of ordering, which caused a considerable amount of short time working and unemployment in many hosiery factories at certain periods of the year. Figures illustrating seasonal variation in unemployment among hosiery workers are given in Chapter VII. No figures are available to show the amount of short time working but this is known to have been substantial. Here again, there have been exceptions where, by planning with manufacturers for production over a considerable period ahead, some wholesalers and chain stores have assisted in the maintenance of an even level of production. We recommend that the Hosiery and Knitwear Council shall be responsible for negotia-

tions with the industry, the distributors and the Government to formulate arrangements to minimise these difficulties.

Packing and Marking of Goods : We have also inquired into the question of "get-up" of hosiery goods which, when excessive, as it was in some cases, was a good deal of a nuisance to manufacturers in the inter-war years, and much of which performed no very useful function. Spurred on in some cases by the activities of certain enterprising label printers and box makers, some of the distributors called for the goods they ordered to be supplied in fancy boxes, provided with printed bands, and marked with special transfers, as well as provided with the more usual rider tickets and swing tickets. Moreover these requirements were sometimes changed frequently, special "get-up" was called for on quite small orders, and was on occasions asked for after the price had been fixed and production started, though this was not common. We are satisfied that much of this was unnecessary, and that the public for their part have no wish to pay extra (as they did) for unnecessary packing, though there is of course a need for packing of some articles (e.g. cellophane envelopes for stockings) to prevent shop soiling and damage in the shop and when being taken away by the customer. There is a considerable measure of agreement among distributors that minimum sizes of orders justifying tabbing and ticketing, etc., could be laid down, and we think this question could profitably be considered by the voluntary Standing Committee of manufacturers, distributors and consumers which we have suggested earlier.

A further complication in the life of the hosiery manufacturer is the question of brand marks. Many distributors have their own brand marks under which they sell the goods they buy, and which often have a considerable " goodwill " value based on service and advertisement. The manufacturer is required to mark these brands on the goods ordered. We do not suggest that the use of brand marks is in itself objectionable, though we doubt whether they are always a sufficient guarantee of the quality standard they (and the associated advertisements) imply. We do, however, consider it undesirable that such marks should be required, as they have been in the past, by distributors who are unable, or unwilling, to place orders large enough to justify the trouble involved. The distributors whom we met agreed with this view, and we recommend that consideration be given to the determination of the minimum sizes of orders (taking into account continuity of the business offered) which justify the putting of individual brand marks, brand names and trade names on the goods ordered. This might be considered in the first place by the voluntary Standing Committee suggested above, but, in addition, we suggest that the Hosiery and Knitwear Council should assume responsibility for final negotiations.

The Protection and Convenience of the Consumer : We now turn to the consideration of matters which closely concern the needs of the consumer, about which we have had some most useful views and advice from a number of people whose work for the departments of various newspapers and journals concerned with fashions, garments, etc., enabled them to speak with special authority.

Considering first the question of size and fit, we must record that the information we have received indicates that some manufacturers gave far too little attention before the war to these points. It has been contended, rightly in our opinion, that correct size and fit, particularly in underwear, is more important than decoration, though apparently the latter was sometimes regarded as an

adequate substitute for the former. More important points however are the lack of relationship between size markings adopted by different manufacturers, failure to state important size measurements (e.g. foot size of stockings), and insufficient provision for variation between, e.g. waist or bust measurement and length, foot size and leg size, etc. Many of the distributors commented on the difficulties caused by lack of standard sizes, and we are satisfied that the setting up of such standards is necessary.

Standards for shrink resistance and relaxation are also most desirable, and there is also a need for marking garments to indicate that such processes have been applied. Also, in view of the many fibres which may be used to make a knitted garment, the material used and other information of value in connection with laundry treatment, e.g. washing instructions, should be indicated.

In regard to the question of protection of the consumer against deceptive trading methods we have noted with much interest the U.S. Wool Products Labeling Act, 1939, and the Rules promulgated by the Federal Trade Commission under that Act in 1941, to which we desire to draw attention. Foreign goods made of, or including, wool must comply with these Rules for sale in the U.S.A. It became clear to us while taking evidence from all persons concerned that there is a genuine desire by all to conform to fair standards of trading conduct. We are satisfied that the laying down of a code of trading conduct would be in the national interest, and we recommend that this be done. We think it most desirable that this code should be arranged on a voluntary basis in the first instance, under the supervision of the Hosiery and Knitwear Council with assistance of the committee referred to earlier. Existing legislation may create difficulties, but we must leave this matter for consideration between the Hosiery and Knitwear Council and the Government. It may be that, owing to the actions and policies of a small minority of manufacturers and traders, operation of a voluntary code will not work satisfactorily, and we must take this into consideration. We do not however wish to specify that statutory action must necessarily be taken as we feel that, should the position arise, the Hosiery and Knitwear Council will be able to advise the Government what action is appropriate in the light of experience of the working of the voluntary arrangement.

We leave the exact working out of the code to the Hosiery and Knitwear Council with the committee, but would mention here some of the matters which we consider should be included. They are :—

(*a*) Definitions.

(*b*) Disclosure of amounts of fibre content and type of fibre, and the use of terms such as " All," " 100%," etc. (e.g. a garment should not be called " all wool " when it is in fact half cotton).

(*c*) The marking of " irregulars," " seconds " and " thirds."

(*d*) Where gauge (e.g. for women's stockings) is stated, the statement shall be correct.

(*e*) Misbranding, misrepresentation and deceptive selling methods, such as the use of the word " fashioned " in describing goods which are not fully fashioned.

(*f*) Size markings and designations.

(*g*) Use of markings or trade names, etc., which convey deceptive implications, e.g. that goods are made in Scotland when this is not the case.

We now turn to the important question of quality and consider first the influence of fixed " conventional prices " (e.g. 1/11, 2/11, etc.) which were usual pre-war for the bulk of hosiery sales. There is a very large measure of agreement among distributors and manufacturers that this system led to debasement of quality and is undesirable from this point of view. It certainly caused the subordination of quality to price in many instances. For example, when raw material costs rose it was often the case that the quality of the articles made to sell at one of these prices was reduced to compensate for the increased production costs. As we have shown earlier, there were many cases where debasement did not occur, the quality being retained or raised and the goods sold at the next price higher. Many of the distributors whom we met told us that they proposed to follow this course in the future. We nevertheless feel that the position should be kept under review by a competent authority.

We have also given consideration to the question of price maintained goods, and on this point have found it difficult to obtain positive opinions from the people whom we met. We do not wish to suggest that this system is necessarily open to condemnation, nor have we obtained positive evidence showing that it has been abused in the past. On the other hand, we do feel that there is a strong case for keeping under review the quality of goods sold at maintained prices, and we recommend that this be done.

Finally, we have considered the general question of quality, and here we are satisfied that certain merchandise sold before the war was definitely below the standard which the consumer has a right to expect. This criticism applies both to imported goods and to goods produced in the United Kingdom. We found a general agreement among the distributors and manufacturers whom we met that measures for ensuring that all knitted goods sold in the United Kingdom should reach at least a minimum standard of quality, are most desirable. We ourselves are fully convinced of the importance of such arrangements, and we recommend that minimum standards for all knitted goods be laid down where practicable under the supervision of the Hosiery and Knitwear Council.

CONCLUSIONS AND RECOMMENDATIONS—PARTS A AND B

(*a*) The setting up, under the auspices of the Hosiery and Knitwear Council, of a Standing Committee, consisting of the various interests concerned, to advise the industry and distributors through the Hosiery and Knitwear Council:

1. On the various problems of colours, descriptions, trends of fashion, range of sizes and form of get up.
2. On the formulation of fair trading rules and on a technical interpretation thereof.

(*b*) The setting up of standards so that, by agreement of the industry with the distributors, or by the marking of the goods, the public may be better informed or protected as to—

1. Standard of shrink resistance.
2. Standard of relaxation—not confined to those garments that comply with a shrink resisting test.
3. As regards women's stockings—
   (i) In addition to the foot size being stated, the minimum length of each of any determined size length of leg should be stated.

(ii) The gauge of the machine making the stocking, if stated on the stocking, should be correctly stated.

(iii) The use of the word "fashioned" should imply fully fashioned and if not complying with fully fashioned standard should be regarded as a misrepresentation.

(*c*) The Hosiery and Knitwear Council shall consider and, after consultation with the industry and the distributors, advise the Government as to any extensive abuse in regard to the following :—

1. The use of individual brands or brand names when the volume of orders for such goods is not of such a size as to warrant such production.
2. Where quality has been subordinated to price by the adoption of, and working to, fixed conventional prices.
3. The sale of goods at maintained prices where the price has been determined by the amount spent on advertising them rather than their quality.

(*d*) The Hosiery and Knitwear Council, in consultation with the industry and the distributors, should consider and review methods of buying and selling of hosiery in relation to forward planning of production, steady employment and forward buying of materials, etc., and should take such steps as may be practicable to encourage bulk ordering and economic production and sale.

C. IMPORTS, EXPORTS AND MARKET RESEARCH

It is of interest to consider in the first place the relation between the volume of exports and imports and between each and the volume of hosiery production in the United Kingdom. It is not possible to go into details concerning the various products, but a good deal of light is thrown on the position by the average values of the main types of goods produced, imported and exported, which are indicated in Table 39.

TABLE 39

UNITED KINGDOM PRODUCTION, EXPORTS AND RETAINED IMPORTS

(*Source* :—Annual Statement of the Trade of the United Kingdom, Census of Production and the Import Duties Act Enquiry 1937.)

PRODUCT	1935			1937			1938		1939	
	U.K. OUTPUT	EXPORTS	IMPORTS	U.K. OUTPUT	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £	Amount £000's / Value per doz. pairs £
Stockings and Socks (including half hose and children's socks)—										
Cotton	1,332 0·32	110 0·40	269 0·21	1,533 0·25	130 0·43	304 0·20	102 0·48	290 0·22	101 0·48	176 0·22
Wool	6,167 0·49	659 0·56	10 0·71	6,958 0·51	913 0·62	20 0·75	773 0·61	19 0·78	778 0·61	7 0·88
Silk	4,542 0·94	116 1·04	192 1·15	5,473 0·87	95 1·05	355 1·03	87 1·03	416 0·92	83 1·06	349 1·01
Rayon	4,025 0·41	152 0·37	692 0·50	4,406 0·40	120 0·34	1,170 0·49	83 0·32	1,322 0·48	84 0·33	869 0·50
Underwear—		per doz.	per doz.		per doz.	per doz.	per doz.	per doz.	per doz.	per doz.
Cotton	4,322 0·63	254 0·57	162 0·26	5,062 0·63	304 0·56	128 0·27	248 0·58	92 0·29	269 0·55	124 0·29
Wool	3,726 1·57	186 1·31	5 0·64	4,177 1·60	275 1·42	14 1·18	228 1·43	14 1·15	199 1·43	9 1·08
Silk and Rayon ...	2,695 1·13	153 0·78	6 1·65	2,443 1·12	195 0·67	7 1·39	151 0·69	6 1·32	160 0·68	3 0·73
Outerwear (including scarves, neck-ties, bathing costumes, etc., but excluding knitted gloves)—										
Wool	8,761 2·02	628 2·00	145 1·26	9,691 2·19	977 2·04	307 1·55	834 2·21	182 1·58	804 2·23	106 1·29
Other materials ...	1,126 1·11	52 0·97	36 0·35	1,244 1·11	72 1·00	82 0·69	63 1·05	82 0·77	55 1·04	53 0·62
TOTAL	36,696 —	2,310 —	1,517 —	40,987 —	3,081 —	2,387 —	2,569 —	2,423 —	2,533 —	1,696 —

NOTES: 1. Knitted fabric has not been included in the above figures as any figures available also include warp knitted fabrics.
2. The export figures are F.O.B. values.
3. The import figures exclude any duties of Customs.

Trade in 1939 was not normal owing to the outbreak of war and other causes, and while exports in that year roughly corresponded to 1938 exports, all imports except cotton underwear fell below the 1938 level. The main imports were imports of rayon stockings (which almost doubled in amount between 1935 and 1938), of cotton stockings and socks (which were slightly higher in 1938 than 1935), of silk stockings, etc. (which increased in 1938 by nearly 120% over the 1935 level), of wool outerwear (which reached a peak in 1937) and of cotton underwear.

Of the exports, wool outerwear and wool stockings and socks were the chief types, the former being usually slightly higher, and the two together forming roughly two-thirds of the total hosiery exports. Both these exports reached a peak in 1937, as did exports of other hosiery products, except silk and rayon stockings. In 1938 exports of hosiery fell and were very little larger in value than imports.

A comparison of the average values per article of home produced, exported and imported goods is given in Table 40 below for 1937, which is the latest year for which figures of home production are available.

TABLE 40

(Derived from Table 39)

PRODUCT	U.K. VALUE (AS 100)	EXPORT VALUE (F.O.B.)	IMPORT VALUE (C.I.F. EXCLUDING CUSTOMS DUTIES)
Stockings and Socks (including Half Hose and Children's Socks)			
Cotton	100	172	80
Wool	100	121	Quantity negligible
Silk	100	121	119
Rayon	100	85	122
Underwear			
Cotton	100	89	43
Wool	100	89	Quantity negligible
*Silk and rayon ...	100	60	Quantity negligible
Outerwear			
Wool	100	93	71
Other	100	90	62

*A proportion of these articles were made of warp knit fabric.

IMPORTS

Tariffs : In considering the above figures the Customs duties imposed on the import of these goods into the United Kingdom should be borne in mind. These duties are charged under somewhat complicated arrangements, and it is not necessary for our purposes to provide a detailed analysis. We can say generally that the duty on articles of apparel (including gloves, socks and stockings) containing silk or artificial silk is charged at varying rates up to 43⅓% *ad valorem* or 12s. per lb. in the case of silk, and up to 43⅓% *ad valorem* or 5s. per lb. in the case of artificial silk, subject in the case of silk socks and silk stockings to a maximum charge of 10s. per dozen pairs. A duty of 30% *ad valorem* is charged on articles of apparel (other than gloves, socks or stockings) embroidered

or made of lace or lace net, or made in such a way as to resemble such construction, or subjected to stilleto work or similar process. The duty charged on articles of apparel (including knitted gloves, socks or stockings) not containing any silk or artificial silk is normally 20%.

The above does not take into account variations under Empire preference, but this is not important since imports from the countries to which this applies were not large. Apart from this, the duties charged apply equally to goods from all countries.

We now turn to an examination of the main types of hosiery imported, in relation to the countries from which they were imported in 1937. Table 41 shows that about 70% of the total imports (by value) were rayon and silk stockings, the former alone being about half the total. Of other types, only cotton stockings and socks, cotton underwear and wool outerwear were significant and Table 42 is therefore confined to an examination of the position in relation to these types.

TABLE 41

THE VALUE OF IMPORTS OF EACH TYPE OF HOSIERY EXPRESSED AS A PERCENTAGE OF TOTAL VALUE OF IMPORTS

(Derived from Table 39)

PRODUCT	IMPORTS AS PERCENTAGE OF TOTAL IMPORTS			
	1935	1937	1938	1939
Stockings and Socks				
Cotton	17·7	12·7	12·0	10·4
Wool	0·7	0·8	0·8	0·4
Silk	12·7	14·9	17·1	20·6
Rayon	45·6	49·0	54·5	51·2
Total	76·7	77·4	84·4	82·6
Underwear				
Cotton	10·7	5·4	3·8	7·3
Wool	0·3	0·6	0·6	0·5
Silk and Rayon ...	0·4	0·3	0·2	0·2
Total	11·4	6·3	4·6	8·0
Outerwear (excluding scarves, neckties, etc.)				
Wool	9·5	12·9	7·6	6·3
Other materials ...	2·4	3·4	3·4	3·1
Total	11·9	16·3	11·0	9·4
	100	100	100	100

TABLE 42

VALUES OF ARTICLES IMPORTED IN 1937 COMPARED WITH VALUES OF CORRESPONDING ARTICLES MANUFACTURED IN THE UNITED KINGDOM

(Derived from the Annual Statement of Trade of the United Kingdom and the Import Duties Act Enquiry 1937)

PRODUCT	COUNTRY OF ORIGIN	TOTAL* VALUE	AVERAGE VALUE	AVERAGE VALUE OF U.K. OUTPUT
		£'000's	£ per dozen pairs	£ per dozen pairs
Stockings and Socks of Cotton	Germany ...	190	0·57	Fully fashioned =0·78
	Japan ...	95	0·09	
	Hong Kong	9	0·08	Seamless= 0·25
	Others ...	17	0·36	All types= 0·31
	Total ...	311	0·21	
Stockings and Socks of Silk	Canada ...	90	1·34	Fully fashioned =1·28
	Germany ...	104	0·90	Seamless= 0·57
	Czechoslovakia	63	0·67	All types= 0·87
	U.S.A. ...	87	1·58	
	Others ...	24	0·92	
	Total ...	368	1·03	
Stockings and Socks of Rayon	Germany ...	843	0·49	Fully fashioned =0·83
	Czechoslovakia	334	0·50	Seamless= 0·37
	Others ...	7	0·44	All types=0·40
	Total ...	1,184	0·49	
			£ per dozen garments	£ per dozen garments
Wool outerwear (excluding neckties and scarves) ...	Germany ...	117	3·58	
	Belgium ...	66	1·14	
	Japan ...	66	0·99	2·23
	Others ...	41	2·39	
	Total ...	290	1·66	
Cotton Underwear ...	Japan ...	123	0·26	
	Others ...	13	0·53	0·63
	Total ...	136	0·27	

* These figures are Gross Imports

We have heard much about the importation of cheap knitted goods made in countries having a lower standard of living, the goods having a correspondingly lower wage content than is the case with British goods. We have also heard a good deal about subsidisation of exports as a deliberate policy adopted by the German Government before the war and, while we have not examined the matter in detail, opinions expressed by some of our members, and by various persons in the industry whom we have met, are so positive that we cannot avoid the conclusion that these statements are probably well founded. We must, however, express our opinion that, while certain sections of the industry did suffer from competition from low cost foreign production, the United

Kingdom industry as a whole met competition from imports successfully and the position was reasonably healthy except for stockings and socks. This is illustrated by Table 43 below which shows imports expressed as a percentage of production in the United Kingdom for 1937.

TABLE 43

TOTAL VALUE OF IMPORTS OF KNITTED GOODS IN 1937 COMPARED WITH THE TOTAL VALUE OF UNITED KINGDOM PRODUCTION OF KNITTED GOODS IN THE SAME YEAR

(Derived from Table 39)

PRODUCT	U.K. PRODUCTION £'000's	RETAINED IMPORTS £'000's	IMPORTS EXPRESSED AS PERCENTAGE of U.K. PRODUCTION
Stockings and Socks			
Cotton	1,533	304	19·8
Wool	6,958	20	0·3
Silk	5,473	355	6·5
Rayon	4,406	1,170	26·6
Total	18,370	1,849	10·05
Underwear			
Cotton	5,062	128	2·5
Wool	4,177	14	0·3
Silk and Rayon ...	2,443	7	0·3
Total	11,682	149	1·3
Outerwear			
Wool	9,691	307	3·2
Other materials ...	1,244	82	6·6
Total	10,935	389	3·6
Grand Totals ...	40,987	2,387	5·9

Rayon stockings and socks : Rayon stockings and socks accounted for about half the total imports from 1935 to 1939. About 70% came from Germany and practically all the remainder from Czechoslovakia. Unfortunately the statistics available do not give division by types, but it is known that practically all rayon "stocking and sock" imports were women's stockings, mainly fully fashioned types. This must be borne in mind in considering Table 43 which gives value of imports of rayon stockings and socks as equal to 26.6% of total U.K. production. Assuming, as seems likely, that at least 75% of retained rayon stocking imports were of fully fashioned types, then these (£877,000) may be compared with output of fully fashioned rayon stockings in the United Kingdom (£596,000). This very different picture shows imports of fully fashioned rayon stockings to be 147% of U.K. production, so that out of every five pairs sold in U.K. three pairs came from German and Czech factories.

Table 42 shows that the c.i.f. price per dozen pairs of German and Czech rayon stockings (excluding Customs duty) was just over half the price per dozen pairs of British fully fashioned rayon stockings. Also the average cost of these stockings, a good quantity of which were fully fashioned, was little

more than that of British seamless rayon stockings. It is not possible to obtain an exact price comparison, but it is at least clear that German and Czech fully fashioned rayon stockings were landed at prices well below the prices of home-produced stockings of similar type. The balance was at least partly redressed by the import duty referred to earlier though it is not possible for us to say whether this gave more than partial compensation. Home production of fully fashioned rayon stockings in 1937 amounted to 721,000 dozen pairs as compared with the corresponding home output of 2,673,000 dozen pairs of fully fashioned silk stockings. Unfortunately no U.K. production figures giving fully fashioned rayon and silk stocking production separately from seamless stocking production in earlier years are available, and it is therefore impossible to ascertain the trend in British production. It would seem, however, that the reason for the very heavy imports is to be found partly in their low price, and partly because British output was not adequate to meet demand. The low value of British exports of rayon stockings (see Table 39) shows conclusively that these were nearly all seamless stockings, and the fact that the British fully fashioned stocking industry was expanding very rapidly just before the war is significant.

Silk Stockings and Socks: Imports amounted to 6.5% (Table 43) of U.K. production in 1937, substantial quantities coming in that year from Canada and the U.S.A. (Table 42) at an average price of 104% and 123% (exclusive of duty) of the U.K. average price for fully fashioned types. Substantial quantities of cheaper stockings came from Germany and Czechoslovakia at 70% and 52% of U.K. prices for fully fashioned types. Again a true comparison cannot be obtained owing to lack of information about the division of imports between seamless and fully fashioned types. Although total imports of silk stockings and socks amounted to 15% of total imports in 1937, they nevertheless constituted only 6.5% (by value) of U.K. production, and about half these imports were more expensive than the silk stockings normally produced by U.K. manufacturers. This suggests that the U.K. output was inadequate and that U.S. and Canadian stockings of high quality were popular.

Cotton Stockings and Socks: Cotton stockings and socks amounted to nearly 18% of total imports in 1935, and by 1938 had fallen to about 12%, the drop being more than compensated for by an increase in silk and rayon stockings. In 1937 imports of these goods amounted to 20% of the amount (by value) of U.K. production (Table 43). The most noticeable feature about these imports is that about one-third of them, which came from Japan, were landed at prices which were only about one-third of the average price of goods of the same classification produced in the United Kingdom. This may not be a fair comparison since the Japanese goods may have included a smaller percentage of cotton stockings and consequently a higher percentage of socks, than did the U.K. goods with which we have compared them. Even taking this into account it, is clear that the landed prices of Japanese cotton stocks and stockings were well below the level at which U.K. manufacturers could produce. Some of our members know from experience that some of the Japanese prices were such that they would not have covered the raw material costs of U.K. manufacturers producing goods of the same type.

Underwear and Outerwear: Cotton underwear and wool outerwear imports were appreciable, though both were usually under 10% of total knitted goods

imports. Here again it is to be noted that the landed price of Japanese imports was below half the price of similar U.K. goods, Japan supplying almost all the cotton underwear imported. Belgium also supplied some goods at a price only about 15% above the Japanese price.

General Observations: We wish to state our definite view that restrictions should be imposed, by tariffs or otherwise, on importation of hosiery which, as we are told was the case with German stockings before the war, competes successfully with home production because the Government of the exporting country subsidises the export of the goods. We are also opposed to the free importation of goods which, for any other reasons, are sold in the United Kingdom at prices lower than they are sold in the country of origin.

One of the examples we have in mind in this connection is the Japanese knitted goods which were imported before the war at prices varying from one-half to one-third of normal prices of similar hosiery produced in the United Kingdom, and amounting in some cases to less than the cost to home manufacturers of the yarn needed to produce such goods. Clearly unhindered imports of this kind would kill manufacture of corresponding goods in the United Kingdom and should be penalized by appropriate tariffs.

EXPORTS

The interests of the majority of hosiery manufacturers have always been mainly in the home market, though a few firms have been well established exporters for many years. As Table 44, below, shows the general level of total hosiery exports has fluctuated considerably, falling heavily in 1930 and 1931 without showing any appreciable subsequent expansion. It seems likely that the excess of home demand over supply for some types of garments in the 1920's, and the slump in the 1930's, had a good deal to do with this. In 1937 exports amounted to about 7% (by value) of U.K. hosiery production.

TABLE 44

TOTAL HOSIERY EXPORTS FROM THE UNITED KINGDOM, 1920-1939

(*Source* :—Annual Statement of Trade of the United Kingdom)

YEAR	EXPORTS (£ 000's)	YEAR	EXPORTS (£ 000's)
1920	10,670	1930	4,571
1921	3,870	1931	3,016
1922	7,054	1932	2,732
1923	6,973	1933	2,640
1924	7,435	1934	2,605
1925	7,939	1935	2,413
1926	7,438	1936	2,762
1927	7,064	1937	3,164
1928	6,727	1938	2,629
1929	6,459	1939	2,579

A complete analysis of the causes of the low level of hosiery exports in the inter-war years cannot be covered in this report, but we think it desirable to refer briefly to some of the main difficulties which have faced United Kingdom manufacturers. Some types of knitting machinery, for example flat bar machines, were not made in this country and, for such machines, manufacturers had to depend on overseas machine builders. In consequence, re-equipment

after the 1914-1918 war was slow and, with the heavy demand from the home market, manufacturers and distributors who had not, before that time, established export connections, tended to concentrate on developing their business for the home market in preference to undertaking the more difficult and hazardous enterprise of export business.

Countries which before the 1914-1918 war had depended on imported hosiery suffered from shortages during that war, and this accentuated their tendency to set up home industries. Substantial quantities of knitting machines were exported to these countries from Great Britain, Germany and elsewhere, and local industries grew rapidly in many countries. For example Australian imports of hosiery, which were very substantial in 1928, had fallen to a relatively insignificant figure by 1937, while Australian production of hosiery grew proportionately during that period.

The growth of local industries in developing countries has generally been accompanied by the imposition of protective tariffs, which have been a considerable obstacle to manufacturers wishing to export to those countries, and in some cases, *e.g.* Australia, have been practically prohibitive. Existing tariffs and the uncertainty about the imposition of further tariffs have undoubtedly been a factor in discouraging hosiery manufacturers from undertaking export work, though in some cases British goods have had preferential treatment under reciprocal trade agreements and other arrangements.

It is impossible to forecast what changes in existing arrangements will be reached by international agreement at forthcoming conferences, but it may well be that the preferential position which hosiery manufacturers enjoy in some markets will be weakened. On the assumption that the outcome of the discussions will be a general scaling down of restrictions and removal or reduction of special preferences, it will be obvious that, while this may be of general national advantage, the hosiery industry as a relatively small exporter may lose rather than gain by the change, unless much greater efforts than in the past are made to establish and expand its overseas trade.

We have discussed earlier the importation of cheap goods into the United Kingdom, some from countries having lower standards of living and longer working hours, and some from countries where production was subsidised. It is not surprising to note that these cheap goods also penetrated into overseas markets, where United Kingdom manufacturers were unable to compete. We consider the practices of " dumping " surplus production in overseas markets at prices below those for which the goods were sold in the country of origin, and of Government subsidisation of exports, or other trading policies leading to debasement, to be highly undesirable, and we hope that restriction of these practices by international agreement will be possible.

The future of United Kingdom exports in certain lines, notably stockings, socks, and cotton underwear will be considerably affected by the future position of the hosiery industries in Germany, Italy and Japan. We appreciate that the policy to be adopted pending the return of these countries to independent status is a matter for agreement between the various Governments concerned and cannot be announced in full until final agreement is reached, but it is of the first importance that the Government shall inform the industry of the position as fully as the circumstances permit, and as early as possible.

Main Export Markets in 1939.

TABLE 45

EXPORTS OF STOCKINGS AND SOCKS IN 1939 SHOWING MAIN MARKETS

(*Source* :—Annual Statement of Trade of the United Kingdom)

TYPE OF GOODS	MARKET	TOTAL VALUE £000's	VALUE PER DOZEN PAIRS £
Cotton	S. Africa and S.W. Africa ...	39	0·42
	Australia	10	1·05
	Other British Countries ...	34	0·48
	Foreign Countries...	18	0·47
	Total ...	101	0·48
Wool	S. Africa and S.W. Africa ...	158	0·52
	Canada	90	0·76
	New Zealand ...	54	0·51
	Eire	52	0·51
	Other British Countries ...	98	0·64
	U.S.A. ...	157	0·58
	Denmark	51	0·73
	Other Foreign Countries ...	118	0·78
	Total ...	778	0·61
Silk and Rayon	S. Africa and S.W. Africa ...	43	0·38
	Channel Islands ...	25	0·70
	Eire	22	1·15
	New Zealand ...	16	0·32
	Other British Countries ...	47	0·48
	All Foreign Countries ...	14	0·60
	Total ...	167	0·51
All fibres ...	Total	1,046	0·57

TABLE 46

EXPORTS OF OUTERWEAR IN 1939 SHOWING MAIN MARKETS

(*Source* :—Annual Statement of Trade of the United Kingdom)

TYPE OF GOODS	MARKET	TOTAL VALUE £000's	VALUE PER UNIT QUANTITY £
			per suit
Wool goods :— Costumes and Two or Three Piece Suits ...	British Countries ...	30	0·87
	Foreign Countries...	3	1·55
	Total	33	0·90
			per dozen
Wool goods :— Jumpers, Cardigans, Pullovers, etc.	S. Africa and S.W. Africa ...	112	1·64
	Eire	81	1·99
	Canada	42	2·40
	New Zealand ...	41	2·16
	Other British Countries ...	78	2·45
	U.S.A.	122	6·53
	Argentina	13	7·7
	Other Foreign Countries ...	69	4·3
	Total	558	2·61
Wool goods :— Neckties, Scarves, etc.	Total	17	1·19
Wool goods :— Other outerwear	S. Africa and S.W. Africa ...	45	1·77
	Eire	44	1·95
	New Zealand ...	23	2·12
	Canada	21	1·58
	Other British Countries ...	22	2·02
	U.S.A.	13	2·58
	Other Foreign Countries ...	28	3·69
	Total	196	2·04
Outerwear of materials other than wool	S. Africa and S.W. Africa	24	0·9
	Other British countries ...	23	1·05
	All Foreign countries ...	8	1·73
	Total	55	1·04
Outerwear :— All fibres ...	Total	859	2·08

TABLE 47

EXPORTS OF UNDERWEAR IN 1939 SHOWING MAIN MARKETS

(*Source* :—Annual Statement of Trade of the United Kingdom)

TYPE OF GOODS	MARKET	TOTAL VALUE £000's	VALUE PER DOZEN GARMENTS £
Cotton underwear	S. Africa and S.W. Africa ...	177	0·50
	Canada	13	0·49
	Other British countries ...	56	0·63
	Foreign Countries...	23	1·03
	Total	269	0·54
Wool underwear ...	Eire	38	1·47
	Canada	31	2·08
	New Zealand ...	29	0·80
	S. Africa and S.W. Africa ...	27	1·27
	Other British countries ...	22	1·50
	Argentina	12	3·72
	Other Foreign countries ...	39	1·82
	Total	198	1·43
Underwear of other materials ...	S. Africa and S.W. Africa ...	103	0·62
	Other British countries ...	51	0·77
	Foreign countries ...	6	1·16
	Total	160	0·68
Underwear :— All fibres ...	Total	628	0·72

Tables 45, 46 and 47, show the main export markets in 1939, and the value per unit quantity indicates the class of goods exported to each market. It is noticeable that, except for the U.S.A., the main markets in every class of goods were found in Empire countries. In cotton socks and stockings, rayon and silk socks and stockings, and underwear other than wool, hosiery of United Kingdom manufacture was sold almost exclusively to Empire countries. It was in these types of goods that Japanese and German competition, to which we have referred earlier, was felt most. A further point of interest is the relatively high price of the outerwear supplied to the U.S.A., where home production is well developed and the tariff is a fixed figure for a given class and type of garment. This contrasts with the relatively low price of outerwear supplied to South Africa and South West Africa, which formed the main Empire market for practically all types of hosiery, and where hosiery production is less well developed than in the U.S.A. This contrast shows clearly the wide difference which can exist between the opportunities in different markets, and may explain the view we have heard from some sources that expansion of hosiery exports must depend mainly on the efforts of firms who have considerable experience in the export

field. We do not agree that this need be or should be the case, since there are many efficient producers whose interest in exports has been small in the past. The general shortage of goods in all markets which exists at present, and appears likely to continue for some time, affords first-class opportunities for making and expanding export connections which will be of permanent value. If the hosiery industry is to play its full part in contributing to the need for greatly increased exports, full advantage must be taken of these opportunities as it is unlikely that the position will be so favourable again for a long time to come.

Market prospects vary considerably from country to country and are difficult to assess from a distance. The following report on prospects in North America was made to us by our members who visited the U.S.A. and Canada:

EXPORTS TO NORTH AMERICA

Prior to their visit to North America your Delegation had the advantage of considering the views on the subject of exports to this particular market of a number of British representatives who had previously visited that country. While keeping clearly in mind the opinion they expressed we approached our problem free from any decided views on the subject, and the comments that follow are based on the information obtained during our visit to the United States of America and Canada, during which we had the opportunity of meeting many persons interested in this aspect of our problem.

SCOPE OF THE MARKET

The volume of consumption of hosiery and knitwear in the United States of America and Canada is such that it was quite clear that the exports from Great Britain to these countries could substantially be increased without materially affecting any single producer in these countries. We have noted previously the fact that, in the United States, certain steps are contemplated in regard to the protection of the home industry, particularly is this so in the case of wool products, but we have considered it necessary to advise on the matter without taking account of these possible political repercussions.

PRE-WAR POLICY OF BRITISH MANUFACTURERS

We were informed by substantial buyers that the pre-war policy of British manufacturers was, as a whole, not as forceful as the market justified. In certain directions a relatively substantial export trade was conducted by certain British manufacturers, and this trade was, in the main, confined to the better class fashioned outerwear and fashioned underwear, and medium and high grade men's half hose.

AMERICAN PRODUCTION AND DEMAND

Earlier in this report reference has been made to the probability that there will be an increased demand by the American public for wool garments, and it is the considered opinion of your Delegation that British manufacturers could effectively compete in the manufacture and sale of such goods in the medium and higher end of the trade, particularly as regards the following:—

(*a*) Men's half hose;

(*b*) Infant's and Children's Wear;

(*c*) Underwear and Outerwear (in both cases, men's and women's);

(*d*) Sportswear.

We would also commend to the notice of British manufacturers the possibility of the export of garments made from interlock fabric.

In the field of women's stockings, however, your Delegation are of the opinion that few, if any, possibilities, will present themselves to British manufacturers in this market.

STYLING OF GOODS

We consider that effectively to compete in this market and maintain the high prestige of British made garments that at present exists, every care should be taken by British manufacturers to conform to the style required by the American market. The approach to this market must involve initial research into the consumer requirements in this class of merchandise, particularly in relation to size, weight of garment, style and cut, colour and design.

METHOD OF DISTRIBUTION

The view was expressed to us that in this field British manufacturers had not taken full advantage of the opportunities available for effective trading in this market. Whereas for certain manufacturers conducting a trade of a certain size the use of import houses and wholesalers is a convenient method of distribution, we would stress the desirability on the part of British manufacturers to sell in this market on as large a scale as possible, consistent with the speciality nature of the type of goods being manufactured. We were informed that small quantities of British goods had been placed upon the American market without creating any bulk demand for such goods, other than satisfying the natural desire of any distributor to sell any goods. Your Delegation feel that the problem of exports to this market should be tackled resolutely, scientifically and profitably, from the long term point of view. To do this, research into the conditions of consumer demand in North America is necessary, and the establishment of appropriate channel of distribution. In this latter field, we include the setting up by British manufacturing exporters, either singly or collectively, of selling organisations in North America with staff permanently engaged in that country.

A substantial part of the exports to North America of this industry are sold through department and chain stores. In some cases these stores buy through the established buying agencies in their own country, but in others, and, we understand this tendency is growing, through established buying offices in Great Britain. It is through this channel of distribution also that we consider a substantial increase in volume could be effected, and we commend to the Working Party the suggestion that groups of small manufacturers whose products are manufactured in similar style could participate in this market and provide the large distributors in America who may even specify the goods in great detail with a reasonable volume of goods of that style.

CONCLUSION 22

Your Delegation are strongly of the opinion that the export to North America of the type of goods referred to herein could be increased substantially, but they stress the necessity for the orderly distribution of such goods, and the important fact that such goods should be made to conform to the requirements of that market. They are of the opinion, however, that the export of Hosiery to this market will not suffer in the long run as a result of the present level of exports but stress the need for a proper and early survey of this market, and when ready, a steady and sufficient flow of the goods to which we have referred. In this connection we would draw attention to the full facilities in the field of market research and promotion of the sale of British wool products available to British users of wool provided by the National Wool Textile Export Corporation, who are well represented in New York.

The U.S.A. has in the past been mainly a market for high grade outerwear (mostly fully fashioned), and medium and high grade men's socks and stockings. There seems no reason to doubt that the main trade in the future will be in these lines, but in our opinion there should also be greater scope for the other lines mentioned in our delegation's report. In particular, outerwear made of good quality fabric produced on the latest types of circular machines should be a profitable line, provided that the making-up is of a high standard, and the styling good.

We emphatically endorse the views about the need for consumer research in North America, about the setting up of selling organisations in that continent, and about the desirability of groups of manufacturers establishing connections with American department stores and chain stores, which are expressed in the above quoted report.

Opportunities for exports of high quality hosiery other than to the U.S.A. have been small in the past, and while it is likely that a more vigorous and resolute approach to such markets as Argentina would yield results, manufacturers may well feel that a corresponding amount of energy and expenditure would give better results in the U.S.A. This, however, is a matter for expert consideration in the light of information about local conditions.

South Africa has, in the past, been one of the most valuable markets for British hosiery, particularly for wool socks and stockings and the cheaper types

of wool outerwear. Increased competition from the South African hosiery industry is to be expected in the future, and long-term expansion of exports will be dependent to a considerable extent on reduction in manufacturing costs by a greater amount of flow production and by low cost distribution. A leading hosiery manufacturer from whom we took evidence suggested a co-operative marketing arrangement, which at one end drew supplies of a very limited number of styles of goods (made to a specification drawn up after investigation of local needs) from many manufacturers, part of whose machinery was used for continuous production of these goods (thus giving long runs and low cost production), and at the other end provided low cost distribution and advertising. This system was suggested only in connection with stockings and socks and interlock underwear because the fashion element is not predominant in these lines. In our view, this suggestion offers the best method of obtaining expansion in exports of appropriate lines to South Africa and other markets requiring hosiery outside the "speciality" class, and we recommend that the Hosiery and Knitwear Council should assist the establishment of such an organisation.

The co-operative selling and distributive arrangement referred to in the preceding paragraph seems to us to offer the only hope of obtaining a substantial hosiery export trade to countries like India and China. For countries of this kind, where substantial sales depend on the attainment of an extremely low price level, flow production of simple garments seems essential, and the utmost economies which can be obtained by long runs on a very few types are necessary. Probably also marketing by a single large agency would be necessary. Any efforts to obtain this business must, however, be preceded by an expert investigation of the conditions of the market, and here again progress is dependent on satisfactory arrangements for market research. These arrangements should be well within the scope of the industry.

The British Silk Stockings Corporation, which was formed during the war to dispose of stocks of silk stockings held by manufacturers and wholesalers before the introduction of Lend/Lease arrangements, has, among other things, arranged for an examination of the stocking industry in the U.S.A. and for a market enquiry in South Africa. We have quoted elsewhere in this report from the useful report (now published) made by the delegation sent by the Corporation to the U.S.A. No information is yet available about the results of the enquiry in South Africa, but this is about to be published. We presume that the Corporation, as a war-time organisation, may well elect to go out of existence in due course, and suggest that there is a need for an organisation to take on the work which it had begun, though without limitation to the field of women's stockings alone. The principal function that might be assigned to such a body is the arrangement of bulk manufacture and sale to suitable markets (*e.g.* South Africa, India, China, the Middle East, etc.) of products designed as a result of market research, as is suggested in the two preceding paragraphs. Alternatively it should organise market research in world markets. This matter we consider should receive the immediate consideration and action of the Hosiery and Knitwear Council.

Methods of Trading : Export sales have in the past been mainly through the following channels :

(*a*) by commission selling agents abroad ;

(*b*) through buying offices maintained in the United Kingdom by Colonial and other distributing organisations ;

(*c*) direct from manufacturers to distributors overseas ;
(*d*) by British wholesalers ;
(*e*) through British selling companies established overseas ;
(*f*) through shipping and confirming houses ;
(*g*) by co-operative arrangements.

Each of these methods has its own advantages and drawbacks. Selling through buying offices located in the United Kingdom offers an easy method to manufacturers, though the distributing profit does not add to the value of the export as is the case when the export is undertaken by a British wholesaler. We have been informed by representatives of the wholesale trade from whom we have taken evidence that 25% of pre-war hosiery exports were sold by wholesalers, who often financed production as well as distribution. Many wholesalers have valuable experience in the export field, and their efforts and co-operation will be important to the future success of this trade. The need for maximum exports makes it essential to use every channel which promises success, and we have no doubt that there will be room for the use where appropriate of all the methods which have been successful in the past. There are, moreover, welcome signs that hosiery manufacturers are taking steps to co-operate in the use of methods which are beyond the reach of most individual manufacturers.

We have taken evidence about one arrangement, which seems particularly suitable for high-grade merchandise, and which consists of a selling company with overseas representation by full-time representatives or agents as appropriate. The company assesses the needs of various markets and contracts with a small number of manufacturers to take part of their output, the company specifying the goods to be produced after carrying out market research. The manufacturers chosen are producers of complementary goods so that a full range is secured, and the distribution and sale of the goods produced is entirely in the hands of the company. This arrangement corresponds closely to that suggested in the report of our delegation to North America, and we feel that it offers considerable advantages in North America and similar markets.

A wider arrangement, which appears admirably designed to combine the advantages of bulk overseas selling and advertising and the sharing of expenses of market and commercial research with maximum flexibility, has been launched by twenty-five hosiery and knitwear manufacturers in the South of England. The scheme includes London showrooms, branch offices in the main overseas markets, and full time agents in smaller markets. Market research will be undertaken, a Style Bureau will be created, and joint shade cards assisting co-operation between member firms will be evolved. It is also proposed that technical information on production, plant, layout, etc. will be interchanged between member firms, and duplication of production minimised. We consider that this scheme sets an example which could with advantage be followed by many other firms in the industry.

The schemes referred to in the two preceding paragraphs should secure a useful addition to the export business which pre-war exporters, both manufacturers and wholesalers, will continue to transact, but more than this will be needed if the industry is to make its full contribution to the national need for increased exports. Any efficient hosiery producer should be enabled to participate in the export trade, and we hope that all will see the need for making their contribution. The schemes referred to are small in relation to the total size of the industry, and there is a limit to the volume of trade which pre-war exporting

houses and manufacturers can secure. We have indicated earlier in this report, and repeat here, our view that hosiery exports can be maintained at three or four times the pre-war volume, but this is dependent on a wider interest in export on the part of the industry.

We hope that the Hosiery and Knitwear Export Group, which is now a part of the National Hosiery Manufacturers' Federation, will prove an active force in the stimulation of exports. The services of the Export Group are available to all hosiery manufacturers who care to join, and the new arrangement should ensure an increased interest in the Group's activities and an assured income of a size which will enable it to undertake export promotion on a large scale.

The Export Group has made a start on its work, but there is as yet no indication that this is likely to be on the necessary scale. We are aware that the Board of Trade can, if necessary, make arrangements for services to be provided for an industry in relation to the encouragement and development of the export of that industry's products. We have in mind the example of the National Wool Textile Export Corporation, which is concerned with publicity and market and consumer research relating to the export of wool textiles, and whose expenditure is met out of a statutory levy on sales of raw wool. We consider that an arrangement of this kind would do much to stimulate hosiery exports. We hope that the Export Group may so develop and, as stated previously, we commend the consideration of this matter to the immediate attention of the Hosiery and Knitwear Council and the industry.

Finance : Many manufacturers opening connections with overseas markets will need to give credit facilities for this business. We understand that hosiery exporters have not in the past availed themselves to any great degree of the services of the Export Credits Guarantee Department, preferring to make their own arrangements. We are not in a position to give a detailed explanation of the reasons for this, but would express the hope that the E.C.G.D. under the new arrangements will be able to make arrangements at reasonable cost for hosiery exporters wishing to enter new markets.

Advertising abroad may be regarded as falling under several heads. Direct advertising is well known and is practised by some firms, though the amount which can be done is limited by the cost. Co-operative booking of space such as is covered by the arrangement mentioned earlier offers many advantages, and in addition there is scope for advertising arrangements of a more indirect character by a body such as the Hosiery and Knitwear Export Group. A good deal can also be done by participation in exhibitions. The immediate necessity, however, is the export of hosiery and knitwear of styles and qualities which will ensure goodwill of a more permanent kind than the interest stimulated by advertising. So long as output is limited by shortages of raw material, labour and machinery, it may be necessary to maintain a control on exports to ensure that the needs of the home market are met to the restricted degree provided for by rationing. A balance must obviously be held between the need for exports and the needs of the home consumer, but within these limits the industry must look to the Government to make the export control arrangements as simple and speedy as possible.

MARKET RESEARCH

Reference has been made to market research earlier in this chapter, mainly in connection with assessment of the needs and potentialities of overseas

markets. A certain amount of research into the needs of overseas markets has been done in the past by some hosiery manufacturers and wholesalers. Also assistance in the providing of market information, information about local and competitive foreign products, and about overseas tariffs, customs regulations, etc., has been available from the Department of Overseas Trade, which is now a part of the Board of Trade. While full use should be made of existing knowledge and facilities, a good deal more is needed.

The first need is for the provision of a full range of statistics easily accessible to all interested firms. We have commented elsewhere in this report on the inadequacy of the statistics available, and this applies to information about exports no less than to production and home supplies.

The function of market research overseas is to inform the home industry of the demand for particular types of goods in the country concerned, the ways in which this demand is being met, the costs to be borne by imported goods and the type, price and quality of goods needed to obtain a larger share of the market. This can only be done by experts on the spot, and the general lack of information of this kind is at present a serious handicap to many manufacturers in deciding to which markets the limited quantities of goods, which they can at present produce for export, should be supplied to obtain the greatest long term advantages. The need will, however, increase with the return of balance between supply and demand, and we hope that no time will be lost in undertaking work of this kind. As we have mentioned earlier, groups of firms who are co-operating in the export field have already appreciated the need for this, and we hope it may be possible for many other firms to have similar advantages.

The main proportion of the output of the hosiery industry will continue to be required by the home market. We have suggested earlier a committee on which the hosiery industry, the distributors and the consumer should be represented, and we are confident that such a committee will give most valuable assistance to hosiery manufacturers in correlating production and distribution with the needs of the consumer. In addition individual manufacturers will no doubt continue to receive guidance in the type of goods to produce, both from their own records and from distributors who have their own means of assessing the public's needs, and who have experience and skill gained in many years trading. At the same time we suggest that manufacturers may well find it desirable to obtain independent information about the needs of the consumer, and research of this kind is primarily a matter for the individual manufacturer. Some of our members met a number of representatives of various newspapers and publications whose work keeps them in touch with their readers' needs and views concerning hosiery. We were impressed by the opinions which they expressed and by their general grasp of the needs of the consumer. It seems to us that people who in this way are constantly in close touch with the public are in an excellent position to assist hosiery manufacturers in assessing consumer needs, and would be able to make a useful contribution to an advisory committee on this subject.

CONCLUSIONS AND RECOMMENDATIONS—PART C

(*a*) We recommend that restrictions should be placed on imports of goods the export of which is subsidised by the Government of the exporting country, or which are offered for sale at prices lower than are charged in the country

of origin. We hope that it will be possible to restrict these practices by international agreement.

(*b*) We consider it to be of the first importance that the Government should announce as early and as fully as possible the decisions taken about the position of the German, Italian and Japanese hosiery industries.

(*c*) We are of the opinion that the volume of hosiery exports could be maintained at three or four times the pre-war level if full advantage can be taken of opportunities available in the next 18 months. In particular we are strongly of the opinion that exports to the U.S.A. could be increased substantially, and would stress the need for a proper and early survey of this market.

(*d*) We recommend that the Hosiery and Knitwear Council should assist in the establishment of a large scale marketing company to arrange bulk production and sale of a limited number of types of appropriate goods to markets where the principal demand is for low price goods.

(*e*) We are of the opinion that much could be done to increase hosiery exports by an organisation which could undertake publicity arrangements and market research abroad on behalf of the hosiery industry as a whole. We hope that the Hosiery and Knitwear Export Group will so develop and we commend consideration of this matter to the Hosiery and Knitwear Council.

A RESERVATION BY MR. RADFORD

A single report, containing proposals for the conduct of an industry must, to some extent, be a compromise involving strain in varying degrees on its signatories. In my case the strain is such that I must make a general comment.

It is in the consideration of " the framework of general policies " within which private enterprise in this industry "can make its best contribution to the national good " that I find myself at some variance with my colleagues. I am not so ready as they to impose restrictions on the flow of international trade on grounds of unfair competition or long term prospects : I do not accept the criteria by which they judge. I think they show a tendency to over-emphasise the social advantages of large scale and less varied production. In their desire to control competitive malpractices at home I think they exercise too much faith in the possibility of defining quality of products and relating it to price. Generally their desire for stability inclines them too strongly against the flexibility of industrial structure which a socially acceptable private enterprise economy in my opinion demands.

In implementing the report I should go a long way with my colleagues without disagreement, and I think we should compose many of our differences, but there would be a considerable amount of discussion on one or two points. Social advantage and advantage for a particular industry are imponderables and their " weighing " is inevitably difficult !

ARTHUR RADFORD.

X. The Human Factor in the Hosiery Industry

INTRODUCTION

IN many industries considerable advances have been made in welfare conditions, personnel management and training arrangements under the pressure of war-time necessities. The hosiery industry did not have the assistance and facilities which made this possible, and was indeed much hindered by concentration and the calling-up or transference of its workers.

It is now faced with the problem of getting back quickly employees lost during the war. This is no easy matter, since not only have these people been receiving higher wages than are normal in hosiery, but many of them, particularly the women, attach importance to the higher standard of working conditions and welfare and personnel arrangements to which they have recently become accustomed.

Apart from the necessity for improvements to make the hosiery industry more attractive to returning workers and new entrants, we understand that even before the war the labour turnover in the industry was considerable on account of the high proportion of women employed.

The value of good welfare, personnel management and training arrangements in reducing labour turnover, and in enabling workers to give the satisfactory and efficient service arising from them, is well understood by many of the leading firms in the country who have found that the results of such arrangements have fully justified the time, trouble, and expense involved. Their value will be enhanced during a period of full employment, when the tendency of workers to change their jobs frequently must inevitably increase. In this connection we quote the following passage from the Industrial Health Research Board Pamphlet No. 2, in the series " Conditions for Industrial Health and Efficiency," entitled *Absence from Work : Prevention of Fatigue :—*

> " Good feeling and co-operation between all groups in the factory is undoubtedly one of the strongest incentives to regularity and reliability on the part of the workers. Absence is lowest in factories where the workers and the management get together to help each other in solving the problems of factory production, discipline and policy."

We have therefore devoted a good deal of attention to consideration of the human factor in the hosiery industry, and have had regard particularly to the special problems which arise in the case of small firms.

The installation of new machinery and the introduction of modern technical methods, on a strict cost accounting basis, can only increase efficiency up to a point; beyond that point further increases depend on improving the human effort put into the machines, and the quality of this effort depends in turn on the well-being of the employees. Expenditure on welfare services which contributes to the employees well-being is therefore justified by results.

The employee's first need is for healthy and comfortable surroundings while on the job, but his or her general well-being is affected by a far wider range of circumstances. Clean cloakrooms, good canteens and medical attention (to take only a few examples) also contribute to it, and thereby increase his or her efficiency. Psychological factors also have a direct bearing on it; a well ventilated

shop or a good canteen does not compensate for an ill-chosen or untrained foreman or forewoman, and a whole range of valuable services may be left unused where an employee feels he or she is treated as a " hand " and not as a person. Women are particularly dependent, for success in any job, on their personal situation being well adjusted ; therefore, in an industry where most of the employees are women, a personal approach is particularly needed.

In the hosiery trade the number of employees under one management varies from tens to thousands, and welfare problems cannot be solved by one standard method. The large concerns have already made notable advances. They have realised that expenditure on this side brings in good returns, and that the overheads, spread over a large group, are not excessive. They have created the necessary machinery by setting up Personnel and Welfare Departments, by providing buildings and equipment, and by establishing specialist services. The main difficulties, in a large departmentalised concern, are not material, but psychological and administrative. The maintenance of a personal approach, and the encouragement of individual initiative at all levels, needs special skill and attention, and unfruitful conflict is likely to arise between the production and personnel staff unless ample provision is made for giving both sides a sympathetic understanding of the other's job, and for frequent opportunities for discussing immediate problems.

PERSONNEL MANAGEMENT

Some of the functions of labour management in relation to the workers are to a degree analogous to those of production management in relation to the machinery and plant. This analogy can be, and often is, pursued too far in some directions. The failure to appreciate the physical and mental differences between individuals, which determine the differing extents to which they are suitable for a particular job, is an example of this, and we emphasise later the need for selection tests and medical examination of new entrants. Taking another example, recorded absence and labour wastage figures can, if kept and studied systematically, throw some light on the effect on operatives of any changes made in organisation, working conditions, welfare provisions or processes. We quote from *Industrial Health in War**—

> " If the same degree of intelligence were applied to the understanding of people as to the understanding of machines, an enormous amount of trouble due to wasted effort and boredom could be avoided."

Many of the leading firms in industry are aware of this and their example is being increasingly followed.

After taking expert evidence on personnel management we agree that the facilities given by a central personnel management department, which enables every employee to ventilate grievances, discuss personal problems, obtain information on wage and merit ratings and have works regulations, benefits and social facilities explained, all help to establish and maintain a spirit of co-operation. A different aspect of the effect of such arrangements is illustrated by the following conclusion of the Industrial Health Research Board :

> " Full opportunities for the expression of grievances or complaints will prevent difficulties and misunderstanding, and in that way conduce to low sickness absence and wastage rates."*

* *Industrial Health in War*, produced in 1940 by the Industrial Health Research Board of the Medical Research Council.

The efficient management of personnel can also do much to eliminate any fear of victimisation, and should be of great assistance to foremen and supervisors, as well as to management, in problems dealing with people.

A personnel department has a much wider field of activity than is indicated by the preceding paragraph. It includes, for example :—

(*a*) Recruitment, interviewing and selection of applicants for work.

(*b*) Reception and initiation of new workers—explaining the factory rules and welfare arrangements to them—introducing them to the foreman or forewoman and fellow-workers.

(*c*) Keeping individual employee records, including the results of medical examinations, interviews and selection tests. Keeping general records of absences, labour turnover, and accident statistics and, after careful study of them, advising the management if rates of absence, labour turnover or the incidence of accidents appear to be higher than usual in any department or in relation to the normal level.

(*d*) Supervision of welfare facilities and general working conditions such as lighting, heating, ventilation and seating; advising the management when modifications and additions are necessary; ensuring that the legal requirements of the Factories Act are complied with.

(*e*) Advising on, and preferably supervising, training arrangements of all kinds, including training of operatives and upgrading, supervisory and other training courses.

(*f*) Administering medical, dental and similar schemes, and supervising and helping social arrangements.

(*g*) Encouraging and taking part in arrangements for joint consultation, including works committees.

(*h*) Investigating on behalf of the management the effect of working conditions and environment on the well-being and efficiency of all employed.

Much of this work is of a specialist character involving modern methods and techniques, and its success is largely dependent on the training and ability of the personnel manager.

In the preceding paragraphs we have outlined some of the more obvious duties of personnel management which are now commonplace in some firms in many industries. Very adequate surveys of the effect of physical environment on production are given in the reports of the Industrial Health Research Board. The most recent developments in the study of the human factor in production have been concerned with the study of workers in a factory or department as a group rather than as individuals. We are indebted to the National Institute of Industrial Psychology, whose advice we have had on this matter, for drawing our attention to two useful investigations made in the U.S.A. by the Harvard School of Business Studies* in which the relationship between the volume of labour turnover and the " social " situation in the factory department is strikingly illustrated by the investigations described. It is not our intention to go beyond a general sketch of this subject, which is indeed of interest to all industries, and we now turn to the examination of its applicability to the hosiery industry.

* "Absenteeism: Management's Problem" and "Studies of Labour Turnover in the Aircraft Industry in Southern California."

With few exceptions, the hosiery industry has not appointed personnel officers in the modern sense. Many firms have introduced welfare schemes and appointed welfare supervisors, but they have been mainly concerned with amenities, and there has been little specialist advice available to managements on modern methods and techniques of recruiting, selecting, training, promoting, demoting, running joint consultative arrangements, etc. In the larger firms employing upwards of about 750 people there is of course every scope for specialisation, and for the employment of trained personnel staff, the personnel officer being ranked at executive level. On the other hand, the employment of a trained personnel officer involves a cost which is not likely to be justified for firms having less than about 250 or 300 employees. In firms of intermediate size management may feel that only partial specialisation covering matters of a kind outside the normal scope of management officials is justified. In this type of factory the functions of personnel management can usually be efficiently carried out by one wholetime personnel officer, who can also be responsible for First Aid and, in a small factory, sometimes acts as canteen manager as well.

The larger firms can afford to employ qualified personnel and welfare staff, and to give them, when they are appointed, some period of time in which to familiarise themselves with the practices and conditions of the trade. But the smaller firms which constitute the bulk of the industry cannot do this, and in many cases the personnel and welfare supervision may not be a full-time job for one person. These small firms have the advantage that, owing to their smaller size, much closer personal contact can be maintained between management and workers than is possible in large establishments, and under good management this advantage is very considerable. Even so, however, managers must, from the nature of the industry, be familiar and keep in touch with a vast range of matters, from purchasing raw material to marketing the finished product, and though some are able to give time and attention to personnel matters, it is not to be expected that they can all find the time to study and apply in detail modern developments in personnel and welfare techniques. It will therefore be necessary in many cases for them to delegate the functions of personnel management to other persons already engaged in managerial duties of one sort or another in the factory. Since the smaller firms are not in a position to make use of personnel officers with high professional qualifications it will be necessary to select and train one or more persons in each factory to do this work in conjunction with their other functions, subject always to direction by the chief executive.

The success of the scheme depends in considerable measure upon the selection of the people for the work, and it is essential that each firm, irrespective of size, should formulate a personnel policy and make definite arrangements for the policy to be carried out. In our view it is of great importance that managements should consult the employees about the scheme before it is put into operation. Indeed consultation may be the only way of convincing workers that the scheme is intended for their benefit.

There are various advisers on the supply of personnel officers and specialist assistants. These include the Institute of Labour Management,* the Industrial Welfare Society, and the Appointments Department of the Ministry of Labour. Training schemes for these personnel officers are already in existence at various

* The name of this organisation has been changed to " The Institute of Personnel Management."

universities and technical colleges, including one year training courses in personnel management and two-year social science courses at which students can specialise on that subject. "Refresher" courses are already arranged from time to time for those engaged on the work.

The problem of training managers and others for carrying out personnel functions with other duties must be met in another way. Part-time training courses on various aspects of the management of personnel have already been arranged in some places for managerial representatives from small firms, and the Ministry of Labour Personnel Management Advisory Branch have told us that it is part of their plan to help, in co-operation with the educational and professional bodies concerned, to arrange short lecture courses, discussion groups and conferences to meet the need of those who are unable to undertake whole-time training. It is also open to firms to send representatives who have been selected for personnel management to one of the one-year training courses, if they can be spared for so long.

A good deal of explanatory work must be done to introduce better schemes for personnel and to interest those who have not yet had an opportunity of obtaining advice on the matter. The Ministry of Labour can advise firms on the organisation of personnel schemes, or how the various functions can best be divided amongst the staff of factories which are too small to employ a wholetime officer. It seems to us that it might be useful for the Hosiery and Knitwear Council and/or the National Hosiery Manufacturers' Federation to arrange for an experienced personnel adviser to give assistance, especially to the small firms.

SELECTION AND TRAINING

We have found no evidence to show that the hosiery industry experienced serious difficulty pre-war in obtaining adequate numbers of juvenile workers. The position is likely to be a good deal less favourable in the future. Some firms are already seriously concerned about it, and several have mentioned an increasing tendency for juveniles to prefer work in shops and offices to factory work. The report of the Committee on the Juvenile Employment Service mentions that if the Education Act of 1944 is fully operative in, say, 10 years time, the number of boys and girls under eighteen years of age available for employment will be approximately half the present number. The field is surveyed generally in the report of the Committee on the Juvenile Employment Service which recommends, among other things, the giving of vocational guidance to children before leaving school, and a system of training grants for suitable boys and girls. It also recommends that no system involving compulsory control of the engagement of juveniles shall be instituted.

We have considered the report made to the Ministry of Labour on the Recruitment and Training of Juveniles for Industry by a Joint Consultative Committee consisting of representatives of the British Employers' Confederation and the Trades Union Congress. We note that this report recommends that the Ministry should encourage the establishment of a National Joint Apprenticeship and Training Council or similar body in each major industry where one does not already exist, to handle matters which need to be dealt with at the national level, and also that the services of the Ministries of Labour and Education and the Scottish Education Department should be available to those Councils in connection with their work. We also note the favourable view taken by the Joint Consultative Committee of the lead given by certain industries in the

setting up of local committees or panels representing the employers' and workers' organisations. There is, in our view, much to commend these proposals, and we are strongly of the opinion that the speedy establishment by the hosiery industry of machinery of the type referred to would improve considerably the long term recruitment prospects. The arrangements for recruitment and training of juveniles have many features in common with those for the training of adults, and it might be advantageous for the latter to be dealt with on similar lines.

There are various matters connected with training and associated questions which are more directly the responsibility of individual firms and which, in the case of small firms, could be dealt with most economically and efficiently by co-operative arrangements. The following are in our view deserving of special attention.

Medical Examination : All juveniles and other persons entering the industry should be medically examined (including eyesight tests) on entry to ensure that the work on which they are put is suitable for their physical capacities. We also envisage this examination as forming the first stage in the medical services referred to later in this report, where co-operative arrangements are suggested for small firms.

Methods of Selection : Training must be closely linked with selection testing from which, in conjunction with the medical examination, the individual's suitability for various kinds of work in the industry can be ascertained. The following extract from the Industrial Health Research Board Pamphlet No. 2: *Absence from Work: Prevention of Fatigue* is of interest :—

> " From every point of view it is worthwhile to try, as far as possible, to see that the job suits the person, even though transfers may mean a temporary drop in production."

Training of Operatives : Any person starting on a new job needs skilled instruction based on a scientific analysis of the work to be done and of the most economical and natural movements which will enable the operations to be performed best and with the least strain. *A number of progressive firms have realised this and are already operating with success or planning to operate training schemes of their own in which such instruction is given.*

We have mentioned that the hosiery industry has not had the advantage gained, for example, by the engineering industries, of the widespread introduction of up-to-date training methods during the war. We feel, however, that the main disadvantage which makes the general introduction of such methods extremely difficult is the smallness of the majority of firms in the industry. There are many advantages in centralised training arrangements. It is easier to secure a high standard and more economical to train people at the same stage of experience in a group rather than as scattered individuals, and firms large enough to be able to assemble such groups from their own workers would benefit from having training centres of their own. In the case of smaller firms a good deal could be done by the introduction of co-operative schemes under which a group of small firms situated fairly close together could form a joint training centre, which might function either in the factory of one of the firms or in suitably located premises taken for the purpose. There are other matters in which the small firm, owing to its size, is at a disadvantage in providing specialist

services, and the activities of the group might also cover some of these services (e.g. medical, social, etc.) under a joint arrangement.

Small firms in outlying neighbourhoods, or small firms who for other reasons cannot participate in group schemes, will necessarily train on the job. This can be done quite satisfactorily if the supervisory staff have been taught the right approach and methods, and are in touch with the latest developments. It is, however, important that the trainee's progress should be carefully planned and supervised by a competent person, who not only knows the work, but knows how it should be taught, and sees that such instruction is given.

We feel that the local committees or panels representing both sides of the industry such as are mentioned elsewhere might do much in promoting co-operative schemes, but there is a real need for a small central service to give expert assistance to the industry in co-ordinating training and other activities, in consultation with the local and national joint bodies. We envisage that, in addition to recruitment and training questions, this central service might also assist with other matters which are mentioned later.

A special problem to which early attention is needed is the training of fully fashioned knitting machine operatives. We have indicated elsewhere that a very considerable expansion in the fully fashioned stocking section of the industry, during the next four to five years, is both desirable and probable. The corresponding increase in the labour force of this section will necessitate the training of at least 3,000 knitters. Moreover, since the wages normally paid in this section are very much higher than the wages paid to operatives who knit fully fashioned underwear and outerwear on Cottons Patent frames, it seems inevitable that a substantial proportion of the Cottons Patent operatives (of whom there were about 1,000-1,200 pre-war) will migrate to the fully fashioned stocking section, which will thus share its training problems with the Cottons Patent section.

The industry has generally accepted that a fully fashioned knitter cannot be trained in less than four years, and on this assumption the problem of training the necessary knitters would be of the first magnitude. Fortunately the enquiries made by our members who visited the U.S.A. have revealed that, according to American experience, given satisfactory arrangements adult persons can be trained to become competent knitters of fully fashioned stockings in 6-12 months. We quote the following passage from their report :—

> " It was further demonstrated from all the available information received that only a relatively small proportion of key personnel was needed to train and establish the (fully fashioned stocking) industry in the new areas. It was freely admitted that prior to this migration the industry as a whole had largely accepted the view that 4 years' training was necessary to produce a fine gauge knitter, but experience in the South had proved conclusively that competent (adult) knitters could be trained in from 6 to 12 months, according to the adaptability of the individual."

It should also be borne in mind in this connection that, to quote from the report,

> " in training of operatives a far more selective method was adopted than that generally observed in Great Britain."

Also quality control is used to a very much greater degree than is general in Britain. The following conclusion from the report will be illuminating in this connection :—

> " Finalising our observations on this aspect of ' Production Efficiency,' we were satisfied that, generally speaking, American manufacturers have profited by the care and attention they have given to their production, and in particular to the

manner in which they have trained their operatives and the high standard of efficiency expected of all concerned."

We feel that the problem of training fully fashioned knitters needs to be tackled energetically without delay, and that the central service mentioned above might, if set up, make a special investigation of American training methods and work out methods suitable for British production, in conjunction with interested sections of the industry. Another problem which also appears to us to need early attention is the training of linkers. Some of the large firms have already made their own arrangements for this, but many firms have still to appreciate the extent to which training times can be shortened and efficiency increased by the use of modern methods. Here again there is a need for a service which can give advice to manufacturers and enable them to assess the value of the latest training methods, by publishing, for example, details of progress made by sample groups of trainees under these methods.

So far as recruitment and training of operatives is concerned, we are of the opinion that much advantage would be derived from the following services given by the central service, in association with national and local bodies or panels of the kind mentioned. These services might be provided by the appropriate employers' organisations, or by the Hosiery and Knitwear Council in consultation with them :—

(*a*) The publication of information, in a form which will explain generally the nature of the work in the industry, to young people who might be interested in entering the hosiery industry. These arrangements could also include publication of information about arrangements for technical education, as is already done by the Education Authorities in Nottingham and elsewhere.

(*b*) Sponsoring the production of more technical booklets in the form e.g. of articles by experts in the industry (to be supplied at a reasonable cost). Assisting firms and groups of firms with the production of more specialised booklets relating to their particular conditions.

(*c*) The setting up of methods of selection and the training of persons therein, or the making of arrangements for such training. The selection testing service should include, originally at least, publication of information about the progress of sample groups of people showing the relationship between the indications of suitability obtained from the tests in each case and the suitability of each person as shown by subsequent experience over a reasonable time. Assistance to any firm or group of firms wishing to set up a selection testing system, at a cost which will cover expenses.

(*d*) Analysis of the various processes, and the production of a training system layout for each process, based on the analysis and on the latest modern techniques. The provision of these training layouts is regarded as a basic service necessary for the good of the industry, and the necessary printed matter should be made available to any firm requiring it at a nominal fee. Here again publication of the progress of sample groups of people at various stages during their training under the schemes developed is desirable. The progress made by such groups will clearly compare favourably with progress made by persons trained in the traditional manner, and the results if published will speak for themselves.

(*e*) The promotion of group training schemes and assistance where needed in the location of suitable instructors, or arrangements for the training of

selected persons from the firms concerned as instructors. If the central service furnishes instructors for temporary schemes, pending the training or location of suitable permanent instructors, the cost of this should be borne by the firm or firms concerned.

(*f*) Surveying of the training facilities of all kinds required for hosiery production and publication to the trade of the results.

(*g*) Co-operation with the national and local joint bodies and the Ministry of Labour, Ministry of Education and other authorities on all matters affecting the development and furthering of training in the hosiery industry. Also the testing (and where justified publication of the results of such tests) of new training methods of interest to the industry.

(*h*) Extensive training schemes have been operating for many years in technical schools in various hosiery centres. Much of the equipment used in this training has been provided by hosiery manufacturers, many of whom have granted time off and paid school fees. We have no doubt that both manufacturers and workers have gained much benefit from these arrangements, and we suggest that a central service could do much in helping each district to make the best use of the experience gained in other districts.

Training of Technicians : Taking a long-term view of the industry's requirements, it is in this field that recruitment and training will yield the greatest dividends. The hosiery industry itself has not employed technicians to any great extent in the past, except in the rather limited sphere of knitting mechanics. Certainly few firms employ technical staff whose main job it is to plan layouts of the factory and its flow of work, collaborate with machine builders in technical development of machines and equipment, install and operate production and quality control methods, motion study and other techniques which are fairly well established in certain other industries, notably light engineering.

The owners or managers of most firms in the hosiery industry have not, generally speaking, been trained in this aspect of industrial practice. This is understandable when one considers the relatively small size of the businesses, and the fact that the people in charge usually have a variety of functions to perform, which have made it difficult for them to specialise on such a subject in the same manner as technically trained men.

It is significant that nearly all the machine builders comment on their shortage of and need for technicians, and bearing in mind the obvious relationship between technicians in both the hosiery and machine building industries, there is a need for a concerted approach to a solution. We would suggest that this matter must be considered from the short-term as well as the long-term standpoint.

From the short-term point of view it would appear necessary to recruit a small number of young technically trained production engineers who would see in the hosiery industry a real opportunity of exercising their talents. In view of the shortage of such people in the machine building industry, little immediate help can be expected directly from that industry, although its collaboration in training these engineers would be invaluable. Unfortunately the engineering industry generally, from which such men would mostly need to be recruited, is also very short of trained technicians. It is, however, in a relatively better position than the hosiery industry to make good the deficiency.

As a first step some of the larger firms might consider engaging a few men of the type who in engineering would generally be called production engineers. These would form a larger nucleus than at present exists, and could set the pace for a wider use. In the case of the many small firms, possibly the employers' organisations could consider the appointment of a small number of such production engineers, who would give (at reasonable cost) an advisory service to those firms too small to maintain their own staff. We do not feel that the Board of Trade Production Advisory Service can adequately cover the requirements of the industry, in view of the many other demands likely to be made on its services.

The long-term provision of technicians can obviously only be achieved by adequate training methods. Three main channels of training seem to be necessary :—

1. Training inside the firm.
2. Instruction in Technical Colleges.
3. Participation in the activities of Technical Institutions.

To deal with the initial establishment of training within firms we feel that the experience gained by the engineering industries in training within this field is probably the best starting point. We suggest that the employers' organisations should have discussions with appropriate engineering associations with a view to recruitment and internal training suitable to the joint requirements. Generally these recruits would not necessarily need long-term training as, say, knitters, and bearing in mind the findings of our delegation to North America, we feel that what might be called a graduate apprenticeship could be devised where young production engineers up to, say, the age of 25 could have a course of specialised training in hosiery works and possibly, by co-operation, in machine builders' works, which, after about twelve months, would enable them to apply their background techniques to their new sphere. This scheme must obviously be worked out in greater detail, and we suggest that this could be worked out more fully by the Hosiery and Knitwear Council.

It is obvious that close collaboration with the appropriate technical colleges would be necessary to provide the best training. Certain colleges already cater for the special requirements of the industry, but obviously something more is needed. Most of the graduates to the industry from engineering would possess the Higher National Certificate, possibly in Production Engineering, and the greater demand for the latter course, which seems likely, should be met by the colleges. There is also a necessity to cater for the post-graduate training of these entrants into the hosiery industry, and obviously any scheme worked out in detail should be in collaboration with local technical colleges.

We also wish to emphasise the important nature of what are often known as professional institutions in completing the training of technicians, and indeed of higher supervisory and managerial ranks also. In the fields under discussion, two institutions come particularly to mind—viz., the Institution of Production Engineers and the Textile Institute. The first, as its name implies, is the specialist national body concerned with advancing the techniques of production engineering, and the second is perhaps the most important body covering the technical requirements of the textile industry in general. From our investigations we note that in neither body does the number of hosiery members reach a level proportionate to the size of the industry, although both have local sections

in the important hosiery centres. The Textile Institute covers a very wide field and hosiery is merely one of its interests, although it presents a reasonable percentage of papers on subjects of direct or indirect interest, and promotes competitions for specific hosiery design work, etc.

We are convinced that first-class Technical Institutions are necessary to promote the science and art of their respective functions, and to encourage those in industry to raise their knowledge and status by comparison with national standards. With this object in view we recommend :—

(*a*) A closer collaboration between the appropriate technical institutions for the provision of an integrated scheme of training.

(*b*) A special examination by the Textile Institute of the hosiery industry's position to consider whether its size, status and requirements do not justify even greater specialised attention.

(*c*) The utmost encouragement being given by top management towards active membership of appropriate technical institutions by their staff, bearing in mind that the individual and corporate activities required by such active membership are likely to provide also sound supervisory and managerial training.

The Selection and Training of Supervisors : The selection of supervisory staff is a skilled job in any industry, and modern methods have been developed on a sound experimental basis. The hosiery industry has so far taken insufficient advantage of these methods and would be well advised to examine the position carefully. It is interesting to note that in the W.A.A.F., technical N.C.O.'s have been taught to look after, and to have in mind, the welfare of the personnel under them. They have been responsible for welfare in their sections as well as for their technical duties. As a consequence of this system many of the women coming to industry from the W.A.A.F. will have become accustomed to taking responsibility, and will have learnt men and women management. In our view the hosiery industry would be well advised to arrange for the fullest use to be made of the experience and training of such people.

In September 1944 the Ministry of Labour began the development of a new form of training called " Training within Industry for Supervisors " (T.W.I.) based on a similar scheme which has proved very successful in the U.S.A. The scheme is intended to give basic training to any person, from a newly appointed charge hand to a senior executive, with a view to developing (*a*) skill of instructing, (*b*) skill of handling workers, and (*c*) skill of improving methods. Instructions in knowledge of the job and knowledge of responsibilities are not included, as these are regarded as matters which can best be dealt with by the firms concerned, where conditions may vary widely. The system provides for five two-hour sessions during working hours for each of the subjects (*a*), (*b*) and (*c*) above. Instruction is given on group conference lines, usually in the premises of the firms concerned, each group consisting of about ten supervisors, foremen or executives, preferably of more or less equal status. In the case of large firms having fifty or more supervisors a suitable person selected by the firm concerned from their supervisory staff is given special training by the Ministry's instructors to fit him to train his colleagues under the Ministry's guidance. In the case of small firms joint arrangements can be made. The Ministry are willing to arrange for interested firms to be given an appreciation of the scheme on request, and make no charge for this or for the subsequent

assistance given. Some hosiery firms have adopted the scheme and are of the opinion that it has proved to be of benefit, and has been successful. We recommend that others should take advantage of the facilities offered, and we have therefore outlined the position at some length.

We have had an appreciation of the scheme given by the Ministry and have studied the Ministry's leaflets T.W.I. 12 and T.W.I. 13. We are aware that two members of the Recruitment and Training Department of the Cotton Board have been trained as instructors, and are conducting T.W.I. courses in the cotton mills, and if a central service concerned with recruitment, training and personnel questions is set up for the hosiery industry as suggested earlier we would regard the giving where necessary of similar assistance to hosiery firms as properly falling within its scope. We would prefer to see arrangements for such a service made on behalf of their members by the National Hosiery Manufacturers' Federation and other hosiery manufacturers' organisations, but failing this we think it might be provided by the Hosiery and Knitwear Council.

Other Training for Foremen and Supervisors : To deal with the war-time need for an increased supply of qualified supervisors the Ministry of Labour organised and financed foremanship courses in Technical Colleges throughout the country, in conjunction with the Ministry of Education and the Scottish Education Department. Instruction is given outside working hours, and the normal foremen's and chargehands' course is of 84 hours' duration, though there is a shortened course of 28 hours. There are courses for women supervisors, which consist of 15 two-hour sessions, and also a series of ten lectures on production planning which takes foremanship training a stage further. These courses appear from the syllabuses we have studied to cover the field generally, but they are designed to cover war-time work in the engineering industries, and so far as we have been able to ascertain, modifications which would make them suitable for the hosiery industry have not been worked out. We note also that a number of technical institutions conduct two-year courses of a general, but more comprehensive, character in foremanship and works supervision, and certificates denoting attainment of a definite standard are issued to successful candidates by these institutions in conjunction with the Institute of Industrial Administration.

In our view the setting up in the principal hosiery centres of courses for foremen and forewomen, adapted to the needs of the hosiery industry, and modified to suit peace-time conditions, would be of considerable benefit to the industry. The first step in making such arrangements is for the industry to approach the Ministry of Labour, and to work out revised syllabuses in conjunction with that Ministry and the appropriate technical education authority. It should be borne in mind here that the main responsibility of advising on the purely technical sections of these courses and of providing the instructors to deal with these sections must rest on individual firms.

Training for Management : The difficulties of laying down any general standard of management practice are very considerable, since the various branches of industry and commerce each demand a substantial degree of specialisation. It is perhaps for this reason that training arrangements have been incomplete and haphazard in comparison with those for most of the professions. We have therefore been interested to hear that the Government has accepted the recommendations of a committee set up under the chairmanship of Sir Clive Baillieu in November, 1945, which recommended the establish-

ment of a British Institute of Management. This body, among other things, will encourage and advise on schemes of training in management, and help to raise the standards of management practice in the country.

We have also noted with interest the arrangements which the Government are making for training in business management to be given to selected men and women whose careers have been interrupted by war-time service in the Armed Forces, the Merchant Navy, the N.F.S. and other war services. The arrangements seem useful so far as they go, but it is not to be expected that they will give full-scale training in all the aspects of management. Moreover, from the point of view of industry, they are inadequate in that they do not make any provision for the training of people who were working in industry during the war. Other arrangements are needed for these people.

For these other arrangements the hosiery industry must look to the local Technical Colleges and the professional bodies, and we understand, for example, that the College of Art & Technology, Leicester, and University College, Nottingham, are likely to re-start the special courses in the economics of the hosiery industry which were conducted there for several years pre-war. We would also refer to the comprehensive courses in industrial administration which are conducted by a number of colleges for the Corporate Certificate Examination of the Institute of Industrial Administration. Apart from Nottingham and London it does not appear, however, that these courses are yet being conducted in hosiery areas.

(*a*) We recommend that the hosiery industry should examine, with the Ministry of Labour, the best methods of enabling the industry to play its full part to ensure that the specialised business training given under the scheme mentioned, to the qualified persons who opt for the hosiery industry, is properly designed for the purpose, and that adequate industrial facilities and opportunities are available for suitable candidates.

(*b*) We also recommend that the industry should work out management training courses in consultation with the Education Authorities, and with the advice of the appropriate bodies concerned with management training and status. It will then be for local organisations of the industry concerned with training and similar questions to arrange with the local Education Authorities for the necessary courses to be provided locally if the need for them justifies this. Further training might also be given to the most successful students at a central institution such as a Staff College for Industry.

(*c*) We further recommend that consideration be given to the provision of scholarships, both to provide for the training of promising candidates, and to enable the best of the successful students, after they have gained experience in British industry, to spend some time in learning the methods and techniques used in other countries.

Joint Consultation : We commend to the attention of the industry the useful part which can be fulfilled by a joint committee in each factory, representing management and workers, which can thrash out problems affecting both sides, and will fulfil the dual function of enabling management to obtain the operatives' views on conditions, etc., and of assisting the operatives to feel that the management is interested in their difficulties and welfare.

In 1940 steps were taken by the Coal Production Council to promote the establishment of Joint Consultative Committees in the pits. This lead was

followed by the shipbuilding, engineering and building industries, and the scheme has gradually been adopted by many other progressive industries. The constitution and functions agreed upon provide a practical basis on which to build up a greater utilisation of these committees in the hosiery industry.

FACTORY AMENITIES

Heating and Ventilation : We understand that on the whole heating is fairly good in the larger factories, and in the smaller ones it is reasonably satisfactory. There is a fairly general need for arrangements for regulation of temperature by thermostatic control in accordance with alterations in outside temperature. Attention needs to be given to this point. The standard of ventilation in the industry varies, and is generally better in the larger firms.

With some materials the manufacturing processes may give rise to dust in the form of textile particles which fill the air and settle on the floors, walls, machinery and operatives. The extent to which this dust or fluff is present varies considerably. It is barely noticeable in many factories, but we have come across one particularly bad case where textile dust was present in large quantities. Conditions of this kind are definitely unsatisfactory and, where they exist, active steps should be taken to remedy them. In this connection we quote the following from the report made by our members who visited the U.S.A. :—

> " With one exception the factories we saw were kept very clean, high-pressure air being used for cleaning machines, shafting, walls and floors. Humidifying plant is used very little, and where used the installation is of the individual Bahnson type. No air-conditioning plant was found in the underwear factories."

Suction cleaning is also used extensively in the U.S.A., and while we have not considered the question exhaustively, we feel that, in so far as mechanical methods are necessary, suction cleaning is most suitable for walls and floors.

We recommend that the provisions of the Factories Act in regard to heating and ventilation should be strictly enforced, and note with satisfaction that the Ministry of Labour is going into the question of temperature and ventilation in connection with the " comfort " of working conditions generally.

Lighting : Owing to the nature of the processes in the industry, the provision of constant lighting is often necessary, and the intensity of illumination is generally higher than the minimum laid down by the Regulations issued under the Factories Act. The standard of lighting does not reach the best modern level, though no doubt war-time difficulties had a good deal to do with this. Some firms, however, have already installed up-to-date lighting systems and others are projected. In some cases insufficient consideration seems to have been given to the effect of inadequate lighting on the quantity and quality of production, and arrangements for the prevention of glare and shadows are far from satisfactory. Some firms have given a good deal of thought to trying out various methods, but we consider that those managements who have introduced fluorescent lighting have achieved the nearest solution to the problem of general lighting.

Good general lighting is of importance not only from the point of view of satisfactory performance of work and of supervision, but also because of the importance of obtaining a cheerful, bright atmosphere in the factories. This will more easily be secured if walls and ceilings and machinery are suitably coloured. Insufficient attention has been given to this by the industry and we would like to draw attention in this connection to the memorandum on

" Lighting, Power Transmission, Prime Movers and Heating in the Hosiery Industry " which has been prepared for us by a group of experts, and which is attached as Appendix C.

The above refers to lighting generally. Attention must also be paid to special lighting for fine work, such as linking and seaming. Individual lights are normally provided on the machines for this purpose. In the case of linking in particular, we have been struck by the number of operatives wearing spectacles, and we have little doubt that this particular work has often caused eyestrain to a degree harmful to the sight of the operatives. Since we are not certain that the danger of eyestrain can be removed altogether, even by the best lighting, we have also referred to this question under the heading of " Accidents and Health Risks." We would say, however, that for this process a degree of illumination very much higher than normal is essential, and the provision of this amount should in our opinion be obligatory. We recommend that the Government, in framing their further Regulations under the Factories Act in respect of lighting, take account of :—

(*a*) the recent advances in lighting equipment (e.g. fluorescent lighting) ;

(*b*) the need for requiring a minimum adequate level of illumination for fine processes like linking,

and lay down suitable obligatory minimum standards.

Cleanliness and Decoration : On the whole, manufacturing processes and materials used in the hosiery industry are not of a dirty nature, and the standard of cleanliness is fairly good. Arrangements for clearing away dust and dirt are however antiquated, and in these there is considerable scope for improvement. The old-fashioned and time-wasting method of sweeping, employed in many instances, must increase the dust and fluff particles which pervade the air, not only adding to the density of the atmosphere, but defeating the object of the work.

Little or no attention has been given to decoration and the beneficial effect of making surroundings as harmonious as possible. It is realised that difficulties in obtaining materials for this purpose have been experienced during the latter war years, but even before the war this state of affairs prevailed. It is well known that women, in particular, react psychologically to the environment in which they work, and in an industry employing large numbers of women, it follows that with an improvement in surroundings will come a greater contentment, and consequent upon this a steadier level of efficiency and an improved production outlook. A great deal can be achieved at small cost in making canteens and rest rooms colourful and inviting. A joint committee would be in a position to invite suggestions from fellow workers, thus fostering amongst employees as a whole a general pride in their surroundings.

Washing Facilities and Sanitary Arrangements : The provision of sanitary arrangements complies in most cases with the *minimum* requirements of the Factories Act, though we have heard of cases where this was not so. We have also been struck by the absence of amenities in the shape of general cloakroom facilities, e.g. mirrors. Decoration and general maintenance of toilets also leaves much to be desired. Perhaps because manufacturing processes are not of a dirty nature, hot water has not in most cases been provided for washing, though it is known that it is regarded as a great boon by operatives in those places where such provision is made. We understand, however, that proper

compliance with the Factories Act (which has not been possible during the war) will include the supply of hot water, though this is not mentioned in the Act specifically. In this respect existing American practice is in advance of ours as, is indicated by the following extract from the report made by our members who visited the U.S.A. :—

> " *Lavatories.*—These were very clean and of the usual structure and layout, with plenty of hot running water, paper towels and hygenic assessories. All were within easy access of the operatives."

In our view, hot water for washing should be provided in all hosiery factories.

Seating : Our observations lead us to the conclusion that not much attention has been given to the seating of operatives in this industry, though the most progressive concerns have recently been giving some thought to this matter. Bearing in mind the need for establishing natural and economical movements on the part of operatives with a view to increased output, we consider the provision of well-designed seats to be essential ; the scientific supporting of the working position is known to act as a deterrent of fatigue and bad posture, with its attendant evils.

Correct seating plays an important part during training, particularly where juvenile labour is concerned, whose posture needs special care. Good sitting habits learned during training should be continued and maintained during the whole working life. The Factories Act does not lay down any statutory requirements, except in regard to " occasional " seats for women, but we note that a variety of different types of seating arrangements are illustrated in Welfare Pamphlet No. 6, *Seats for Workers in Factories*, issued by the Ministry of Labour. We recommend that in the interests of maintaining full productive efficiency, scientifically designed seating, of a kind which will give adequate support to the operative and encourage proper positioning, should be installed by the industry.

Rest Breaks : Breaks are the general rule in the industry, and it is interesting to note that in this respect practice in the U.S.A. and Canada is not so far advanced.

Music while you work : Many factories in the industry have already introduced some form of " Music While you Work," in the main relying on B.B.C. broadcasts, and there is no doubt that the right type of music has relieved the boredom of those engaged on repetitive work and promoted a cheerful atmosphere.

Canteens : Prior to the war a certain number of the larger firms had voluntarily erected hot meal canteens as part of their general welfare policy. One effect of the concentration of the industry on the labour position during the war was that those remaining were older women working near their homes. Employers were, as a consequence, discouraged from making voluntary efforts to set up canteens, preferring to allow more than an hour for the mid-day interval so that employees could get home. Even so we found that of nearly 100 firms from whom we made inquiries, 56 had either canteens or facilities for light refreshments, and 18 had the provision of a canteen service planned, or under consideration.

There is no doubt that the introduction of good canteen facilities into factories has proved to be an immense benefit to the workers. Managements who have

subsidised their canteens, instituting scales of charges in accordance with workers' earnings, have been repaid in a great measure for their expenditure by increased turnover, as the direct consequence of a better production outlook on the part of the workers, produced by these facilities. There will, no doubt, be cases where two or more small factories, suitably close together, and having too few workers and too little space to make their own arrangements, could share a small canteen, and we hope that firms so placed will give serious consideration to the possibilities of such an arrangement. Clearly, the success of a canteen depends on the efficiency of its staff; the larger factories would, where this applies, require to appoint a canteen manageress, but in the smaller units it should be possible for the person in charge of personnel matters to assume responsibility for management of the canteen.

The circumstances in some factories (e.g. where practically all the workers live close at hand) may be such that the setting up of a canteen is not justified, and this can only be determined after consultation with the employees. Where a full canteen is not possible or not needed, consideration should be given to the need for mess-rooms with facilities for warming the workers' own food, for making tea, or for the service of snacks, etc. We regard it as most important to allow the operatives a say in the running of the canteen, and we recommend that, within the general framework of production requirements, the manageress should be advised in running the canteen by a committee of those who use it.

HEALTH AND MEDICAL SERVICES

Accidents and Health Risks : Generally speaking, the fencing of machinery and shafting is satisfactory, as is shown by the fact that the accident rate is lower than in any other textile industry. Occupational diseases are very rare, but we have been struck by the number of women workers wearing spectacles. An investigation made in 1927 by the Industrial Fatigue Research Board of the Medical Research Council into the effect of eyestrain on the output of linkers in the hosiery industry revealed that this eyestrain could be removed by the use of suitable spectacles. We quote from the report* :

> " . . . . it is apparent that the problem of relieving eyestrain among linkers is not confined to the question as to what is adequate and suitable illumination for the work, though a high standard of illumination is obviously essential. It seems surprising however, in view of the nature of the process, that the use of glasses, even by operatives having normal vision, has not previously been suggested and encouraged in this country."

The report describes comparisons of output by three linkers working first without and then with glasses, and concludes :

> " The data presented in this Report show that for each subject a considerable increase in the rate of working, accompanied by a reduction of fatigue, has been effected as a result of the use of suitable glasses. These glasses relieved only the strain due to extreme accommodation, and it is possible that greater benefits might be obtained by the use of glasses which would also reduce the degree of convergence required. No discomfort was experienced by the operatives wearing the glasses and no subjective evidence could be obtained of any disturbance of normal vision when the glasses were discarded at the end of the working day. All the experimental subjects continued to wear the glasses after the completion of this investigation . . . ."

Although this Report was issued in 1927, most firms in the industry seem quite unaware of its existence, nor do they altogether realise the possibility that work on linking may do serious harm to the eyesight of the operatives.

* " The Effect of Eyestrain on the Output of Linkers in the Hosiery Industry."

Research into the question of eyestrain amongst linkers, commenced by the National Ophthalmic Treatment Board before the war, and interrupted by the calling up of specialists engaged on the work is, we understand, proceeding once again, and this evidence (when available) should prove valuable in any approach to this problem. We regard it as unsatisfactory that the process of linking should involve a serious risk of harm to the eyesight of the operatives, and it is possible that the present difficulty in obtaining linkers is due partly to this position.

A number of progressive hosiery firms have been conducting their own inquiries into the position. We have taken evidence from one firm, to whom we are indebted for most interesting information, about their experiences in training girls for linking in conjunction with the training centre they established some months ago. They suggest that adequate lighting and careful training will enable operatives to avoid eyestrain while linking. They point out that of 17 girls who are being trained by their training centre, and whose eyes are tested each month, none have had to wear glasses as a result of their work, nor have any of them complained of headaches due to their work. Prismatic lenses have so far only been used voluntarily by girls who normally wear glasses. These girls say that the glasses are a help.

It is of interest in this connection to note that our members who visited the U.S.A. and Canada found in one or two factories where selection tests were made to ascertain the adaptability of a person to perform a particular operation, particularly linking, that where glasses were needed to fit the person to do this work, the firm in question obtained the glasses. We feel that this matter is too serious to be left entirely to the initiative of individual manufacturers. We have already recommended the laying down of suitable minimum standards of lighting for this work. We now further recommend that the best methods for obviating the danger to the eyesight of the operatives, which linking involves, be ascertained by experiments sponsored by the Government, and that the use of these methods be required by law.

Medical and First Aid Facilities : In the larger hosiery factories arrangements for first aid treatment of accidents and minor ailments form part of the general welfare service, and are satisfactory. In the smaller ones, however, standards vary considerably, and although equipment for this purpose is usually available, there is not always a qualified " first aider " on the staff, nor indeed is one required by the Factories Act where 50 persons or less are employed. The smaller factories which have made the nearest approach to solving the problem are those where one or more of the supervisory workers has been trained in administering first aid, this duty being combined with other duties.

In many cases of minor ailments, especially where women are concerned, allowing a short rest period, instead of sending the person home, will often meet the case. For this reason, even in the smallest factories, a room set aside as a rest room is desirable. Of nearly 100 factories from which we have made inquiries, about 27 have rest or recreation rooms and a further 22 are considering the provision of these facilities. Women, in particular, derive great benefits if they can get away from their machines for short breaks ; time spent in the canteen does not entirely meet the case, because of the element of noise and absence of comfortable seats.

In small factories, as in the case of the arrangements made for the administer-

ing of First Aid, a woman worker engaged on production supervision could be given training on the welfare side to enable her to be responsible for rest room facilities. In this connection it is of interest to note that most of the larger factories in the U.S.A. and Canada (particularly in the fully fashioned stocking section) have one or more qualified nurses permanently on the staff, usually in charge of well-equipped rest rooms, to give immediate attention in the cases of illness or accident during working hours.

The value to management of an Industrial Medical Service lies in the fact that it decreases absenteeism, reduces sickness and accident rates, and increases the employees' efficiency while on the job. They are helped to keep well at work, minor accidents are treated quickly and capably, and they have access to a doctor who knows and understands the surroundings in which they spend a great part of their waking life. The consequent all-round improvement in their health and happiness increases their value to the industry, not only directly, but also indirectly, by making their attitude to the job and management more confident and co-operative. Moreover, the management have at their disposal expert advice, both on existing factory conditions as they affect the health and efficiency of the workers, and on the possible effects of changes.

A satisfactory service implies the supervision of the health of the individual worker in his industrial environment. It should include a preliminary medical examination (including an eyesight test) for adults as well as juveniles, with the aim of fitting the worker to the most suitable employment having regard to his physical and mental capabilities.

Our members who visited the U.S.A. and Canada reported on the position there as follows :—

> " A noticeable feature of most of the larger mills in the U.S.A. and Canada was the obvious attention paid by Management to the health and well-being of their employees. This feature, while predominating within the fully fashioned section of the industry, was by no means confined to this section. From observation, however, it would appear that in the Underwear and Outerwear trades, due largely to the predominance of small undertakings, this feature was far less in evidence.
>
> Practice and application differed in detail mill by mill, yet there were common features in all cases that came under our review. It seemed to be the generally accepted practice, where such welfare is given by Management, to subject each new entrant into the mill to a thorough medical examination, and any physical defects revealed reported upon to the applicant in question, and if immediate medical attention is necessary, to pass on to the applicant's own medical adviser the interviewing doctor's report.
>
> We did ascertain that by this examination a small proportion of applicants were turned down by revealing health defects of a character considered sufficiently serious to warrant the Company not taking such people into their employ. On the other hand, many cases revealed complaints of a character considered to be no bar to entry into employment, provided the applicant agreed to act upon the medical report and seek immediate medical attention. In only one instance did we find a mill employing a permanent resident doctor within the mill. In other cases the doctor was a practising medico within easy reach of the mill and usually spent some time most days within the mill according to the number of people employed.
>
> In the majority of these cases one or more qualified nurses were kept permanently on the staff of the mill, usually in charge of well-equipped rest rooms, to give immediate attention to illness and accident during working hours. From the time of entry into the mill there is no compulsion in relation to further medical attention by the mill doctor or nurses, but in most instances a process of education on the need for utilising the medical facilities provided had developed an almost complete acceptance by the operative of the value of this free health institution. It should be appreciated, however, that general treatments for other than minor ailments were referred to the operative's own doctor outside.
>
> In one mill the health service extended to include dental, optical and X-ray treatment. While treatment and testing were a free service, the worker did make

some payment for dentures and glasses. In other firms this service was co-ordinated with outside dentists and opticians, the firms bearing a share in the general cost of the service given. We did find, however, in one or two mills where selection tests were made to ascertain the adaptability of a person to perform a particular operation, particularly linking, that where glasses were needed to fit the person to do this work the firms in question obtained the glasses."

The employment of a resident doctor is, of course, only within the scope of a very large organisation, and although this is done by many British concerns in other industries, it is hardly practicable for hosiery firms, except possibly the very largest. Arrangements for regular visits to the factory by a doctor who practises in the neighbourhood is probably practicable for all, and it is of interest to note that out of the 97 hosiery firms who replied to our inquiries, 17 have a medical service in operation, and a further 8 have such a service under consideration or planned. The absence in the U.S.A. of a national health insurance service, and the fact that their workmen's compensation law differs so much from ours, has probably a good deal to do with the providing of a *personal* health service in many industrial plants in the U.S.A. Nevertheless, we think that there is room for more adequate provision in the hosiery industry of industrial health services which will be complementary to the provision for civilian health made by the new Act.

The main objectives of the service should be :

(*a*) To promote the general health of the worker by the provision of a good working environment, and by fitting the worker into that environment.

(*b*) To prevent occupational disease.

(*c*) To assist in the prevention of injuries at work.

(*d*) To organise and supervise a service for the emergency treatment and care of injured and sick workers at their place of work.

(*e*) To take an active part in the restoration to full capacity of workers disabled by injury or disease ; and resettlement of workers suffering from permanent disability.

(*f*) To educate the workers on the preservation of health and promotion of well-being.

(*g*) The study of specific occupational hazards and the preventative measures for their control.

(*h*) To advise management on the health aspects of any changes contemplated in organisation, layout or other matters, so that these are taken into account.

A service covering these functions will fall short of its full usefulness unless the industrial doctor becomes familiar with conditions in the factories with which he is concerned, and unless he is able to keep in touch with the advances made and practices developed by other doctors doing the same work. For this reason central direction by a medical officer is most desirable. Central direction implies a group of firms large enough to have a number of doctors each dealing with his own group of factories. As applied to the hosiery industry this could only apply to a co-operative scheme operated on a cost sharing basis by a number of factories. Given the necessary goodwill, such a scheme would be quite practicable, and it is of interest to note there are several schemes of this kind projected and in operation. For example, a scheme of this kind is operating in Bedford where a group of light engineering firms have pooled their resources in order to achieve a more efficient and comprehensive medical service. In our opinion co-operative schemes could in many cases bring within the scope of

small firms the advantages of industrial medical services which are at present only within the reach of the larger firms. We recommend that hosiery manufacturers should give serious consideration to the advantages of such an arrangement, and that the employers' organisations, with the assistance of the central service, should help interested firms to organise co-operative schemes.

We have had the benefit of advice from Dr. T. M. Ling, Medical Director of the Roffey Park Rehabilitation Centre, and have been much interested in his suggestions for a comprehensive industrial health service for the hosiery industry. We consider that the detailed working out of such a service might well be undertaken by the Hosiery and Knitwear Council.

CONCLUSIONS AND RECOMMENDATIONS

(*a*) We consider that the industry would benefit from a much greater use of the services of persons trained in modern methods of personnel management. We suggest that the Hosiery and Knitwear Council and/or the National Hosiery Manufacturers' Federation should arrange for an experienced personnel adviser to give advice on general policy, and particularly to help the smaller firms.

(*b*) We are strongly of the opinion that the speedy establishment of a National Joint Apprenticeship and Training Council or similar body for the industry would improve considerably the long-term recruitment prospects.

(*c*) We recommend the setting up by the industry, or by the Hosiery and Knitwear Council on behalf of the industry, of a central service to assist in instituting and co-ordinating the various activities concerned with recruitment, training and welfare matters which we have suggested. We consider that the most useful arrangement would include national and local joint panels set up by the industry, with which the central service would work.

(*d*) We recommend that the central service should make an early investigation of American methods of training fully fashioned knitting machine operatives, and should work out, in conjunction with interested sections of the industry, the best methods of training the large number of people required for this work.

(*e*) We consider that the industry could, with advantage, make more use of technicians trained in production engineering techniques. We suggest that arrangements should be made by some suitable authority for an advisory service to assist manufacturers at a reasonable cost, and that the industry and the Hosiery and Knitwear Council should work out a suitable recruitment and training scheme in consultation with appropriate engineering associations.

(*f*) In view of the important contribution which professional institutions can make towards completion of the training of technicians and higher executives we recommend :—

1. Closer collaboration between the appropriate technical institutions for the integration of training schemes.
2. A special examination by the Textile Institute of the position of the hosiery industry to consider whether its size, status and requirements do not justify even greater specialised attention.

3. That employers should give every encouragement to active participation by members of their staffs in the work of appropriate technical institutions.

(*g*) We recommend that the industry should examine with the Ministry of Labour the best ways of adapting the courses for foremen and supervisors, and the courses in specialised business training organised by the Ministry, to suit the peace-time needs of the industry.

(*h*) We recommend that the industry should work out management training courses in consultation with the Education Authorities, and with the advice of the appropriate bodies concerned with management training and status. It will then be for local organisations of the industry concerned with training and similar questions, to arrange with the local Education Authorities for the necessary courses to be provided locally, if the need for them justifies this. Further training might also be given to the most successful students at a central institution such as a Staff College for Industry. Also consideration should be given to the provision of scholarships, both to provide for the training of promising candidates, and to enable the best of the successful students, after they have gained experience in the British industry, to spend some time in learning the methods and techniques used in other countries.

(*i*) We recommend that the provisions of the Factories Act in regard to heating and ventilation should be strictly enforced.

(*j*) We recommend the laying down of suitable minimum standards of lighting for very fine work such as linking. We also recommend that the best ways of obviating the danger to the eyesight of the operatives, which such processes involve, be ascertained by experiments sponsored by the Government, and that the use of the methods so determined be required by law.

(*k*) We recommend that in the interests of maintaining full productive efficiency, scientifically designed seating, of a kind which will give adequate support to the operative and encourage proper positioning, should be installed by the industry.

XI. Research

UNTIL recently very little interest in research was evinced by the hosiery industry. The amount of money which was spent by individual firms in the maintenance of their own private research departments was probably small. The total contribution of the industry to co-operative research institutions in the nearly related industries of cotton and wool was but a few hundred pounds, and this was given by a minute number of firms. There was no co-operative research body in the industry itself until 1945, and that fact alone is evidence of the lack of general concern. In that year the Hosiery Research Council was formed by the joint action of the National Hosiery Manufacturers' Federation and the Midland Hosiery Dyers' and Finishers' Federation, and their appeal for funds has yielded promises of approximately £10,000 per annum. In an industry with a present annual turnover of about £70 million this appears to be a low figure. Running parallel with this development of interest in co-operative research there has been an extension of private firms' research and, according to statements we have heard, there is probably somewhat more than £10,000 per annum being so spent. The firms with their own research departments are, of course, mainly the large ones, but one or two small firms are also included. The questionnaire issued through one of the trade papers gave no material on which to base any conclusion, save that, even at present, there is very much to be done to rouse the industry to a sense of urgency in the matter.

The notable expansion of the industry which took place between the wars was clearly not attributable to scientific research sponsored by the manufacturers. This does not mean that there were no new developments; rather must we say that machine builders, yarn producers, etc., introduced the new techniques and the manufacturers developed new ways of applying them. An important cause of the expansion was doubtless the increased purchasing power of the population, which was the expression of the widespread increase of industrial efficiency in the country at large. This increase went in part to the provision of more and better clothing in general, and of hosiery in particular. The share, obvious to all, which the hosiery trade contributed to the revolutionary improvement of the nation's clothing, is an indicator of the success with which hosiery manufacturers organised the necessary resources to meet this demand.

It seems to be widely felt that this expansionist phase has possibly approached an equilibrium level with other industries, though the markets in the fine gauge fully fashioned stocking and the outerwear sections seem still to be far from saturation. This feeling, combined with the pressure of the inevitable post-war problems of scarcities and trade distortions, and the consciousness of potential competition from abroad has had the effect of turning some to research as a defensive rampart. Other manufacturers, however, adopt a more positive and, we might say, aggressive attitude towards the future markets—the long period view—and are interested in research as the spearhead of progress.

As stated by the Hosiery Research Council :—

> " Our national prosperity depends upon establishing and maintaining a high degree of superiority and originality over other countries in our industrial products."

We commend especially the latter view, and urge strongly that all hosiery manufacturers realise that the only sure way of advancing trade is by the continuous pursuit and application of new knowledge. New knowledge is an

increase of effective resources and expenditure on research is the purchase price.

We are not concerned to pass judgment on the hosiery industry for this lack of attention to research in the past. Some of the industries in which research is highly developed have been forced to attend to it by the impact of new fundamental research in Chemistry and Physics, their own manufacturing techniques being very closely akin to those of fundamental research. Again some industries seem to have reached their peaks of production and felt the blast of keen competition years ago, and their necessities then produced interest in research. Lastly the urgencies of war presented certain industries with an obvious call for new ideas and new methods. Hosiery has not had these major shocks or spurs, and the energy which should have been devoted to research has been diverted to or maintained in the channels of development. But there will be much blame due to the industry from now onwards if it neglects research; it must be on guard against self satisfaction.

Industrial research has acquired an importance to-day because the level of knowledge on which operations are carried out is what we may call the scientific. In " simpler " days, thinking of textiles, men merely took the fibres which they found in their natural forms and, by interlocking them in various simple ways, produced a fabric. They classified the fibres in fairly obvious ways according to strength, durability, and so on and they classified fabrics similarly having regard to their waterproof, warmth-maintaining and other qualities. In those days a fibre was a fibre and a cloth a criss-cross of fibres. To-day the position is far advanced. Natural fibres of desired qualities can be produced by breeding; the rotting attacks of fungi and bacteria can be warded off because the ways of these organisms are known; dyeing and finishing can be controlled because the chemist knows something of the inner nature of these processes; the internal chemical and physical structure of fibres is understood so extensively that new ones can be constructed from hitherto unthought of materials (a " simple " case is glass fibre); the fibres and fabrics that have great tensile strength, abrasion resistance, water resistance, heat resistance, elasticity, etc., are known in such ways that these qualities can be controlled. Science has given our sight such a penetrating power that we no longer see our textile manufacturing as the simple interlocking of natural fibres, but as the manipulation of the atoms and molecules of matter. This may seem fantastic but it is cold fact, and its significance is that it is at this basic level that great potentialities of change are to be found, and the real controls of our industrial techniques lie. Industrial conditions are being moulded by biologists, chemists, physicists, etc. wherever they are pursuing " pure science " or " applied science ". Human nature is being investigated similarly by other scientists. The material is more intractable, but there are controls exercising themselves over our affairs that can only be understood by scientific method. Industry is faced with the necessity of becoming science-minded.

There is no need here to catalogue all the problems awaiting investigation in the industry. We have surveyed the various sections from different points of view, considering efficiency of production, distribution, satisfaction of consumers, working methods and conditions, industrial relations, profitability, etc., and we have noted some of the matters calling for research. There is no section of the industry or aspect which did not show opportunities for investigation. We regard it as our special function in this place to suggest improve-

ments in present organization of research activities into new ideas in physical science.

The scientific workers whose investigations are of great significance to industry are not only those who deal with physical properties of materials and machines but, in an increasing degree, those also who are concerned with human affairs. The hosiery industry is not merely an organization for the production of stockings and other knitted things; it is an organization for the satisfaction of human needs, wants and tastes and, further, it is a great part of the lives of many thousands of men and women who work in the industry and draw their living from it. Those who are responsible for the conduct of industrial affairs must realise that the soundness of their policies and decisions depends upon the knowledge which they possess of the likely behaviour of human beings, whether they are thinking of them as consumers in the market, workers in the factory, managers, directors or suppliers of capital or equipment. The size and complexity of modern industrial organisations and the necessity of taking the long view in formulating plans, impose upon the man who possesses, even in an outstanding degree, a " flair " for business, the necessity for providing himself with knowledge that can only be accumulated by men trained in the techniques of human sciences. The demands of the market, advertising, management, the supplies of materials and labour, design, relations between worker and work, prices, wage rates, all call for research in the strict sense of that term. In this section we do not propose to discuss this field of research; we are confining our attention to the need for physical research. We do suggest, however, that the Hosiery and Knitwear Council should consider seriously the establishment of some organisation for the hosiery industry that would be responsible for the collection, collation and publication of the results of research in the economic and sociological fields, the maintenance of contact with professional and scientific research institutions concerned with these fields, including the Universities, and the pursuit of such research on its own account.

The fundamental principle of all research organisation is that they shall be responsible for research who are able to formulate the problems that call for solution or see the opportunities for extending knowledge; they have the direct and strong interest necessary to provide the energy. Derived from this is the principle of co-operation, the bringing together of those with common interests in the matter to be investigated, with its corollary that the distribution of authority amongst those co-operating shall be directed towards ensuring that all interests are duly considered.

From the point of view of the hosiery industry research is valuable mainly to the extent that its results lead to the production of knitted goods of new or improved types, or having new qualities which will better satisfy the consumer's desire for novelty and greater value for money. The industry's main raw material is yarn of various kinds produced by other industries. The cotton and wool industries have highly efficient research establishments of their own, and it is essential that there should be the fullest possible co-operation in the use of their work and facilities by the Hosiery Research Institute. The same applies to the work of central research establishments set up by other industries concerned with the production of yarn. We have taken evidence from one organisation which suggested the centralisation in one establishment of research into all the various uses (hosiery production, warp knitting, weaving, etc.) of a particular type of yarn. We reject this conception as contrary to our first

principle. Hosiery manufacturers are interested in many problems which relate to knitting and associated processes (e.g. the extent to which elasticity of knitted goods is a product of the knitted structure) and which are not peculiar to any particular fibre. The sectionalisation of research according to fibre, mentioned above, is unsuitable for dealing with such problems, and we feel that such sectionalisation is properly a function of yarn research only. The avoidance of overlapping is a common interest calling for co-operation such as consultation or cross representation on the governing bodies of research institutions, but the suggestion that an industry should hand over to some other body the responsibility for increasing its own efficiency is retrograde.

Broadly speaking the people and their associations who are interested in hosiery research are hosiery manufacturers, suppliers of raw materials and equipment, consumers of the products, scientific and other professional workers, the Universities and Technical Colleges, and the community in general through the State. The ways in which they manifest their interests are various, and they vary in the degree to which their interests are involved in hosiery research.

Hosiery manufacturers have a specific interest in the increased efficiency of the hosiery industry, and this interest must manifest itself in—

(*a*) the establishment of a specific hosiery research organisation;

(*b*) the collection and collation of the results of research in other organisations in so far as they have any significance to hosiery;

(*c*) the development and application of the discoveries arising from hosiery research.

The Hosiery firm has a primary interest in its own production, not the general production of the industry. According to its means and efficiency it institutes research. There are problems of research which, kept secret, may be used to the firm's own particular advantage. Its faith in the value of the new idea may be so strong that it may conduct fundamental research, hoping that it may enjoy a quasi-monopolistic advantage. For lack of a co-operative research association on the other hand, it may investigate in fields that it would prefer to leave to such a body if it existed. We have seen the schemes of one or two firms, and they reveal this tendency towards fundamental research, due to the absence of a co-operative scheme. Firms which conduct their own research pay for it and regard the expenditure as an ordinary overhead, a cost of maintenance, an investment, or as the cost of expansion or continuous progress. It is not to be expected that an industry of small firms, such as the hosiery industry, will include many firms with their own research departments, but small units which are research minded will supply their need by subscribing to a collective research association.

The Hosiery Research Council is an association of this character. Its function is to further research appertaining to hosiery by collecting and collating the findings of other institutions and instigating investigation directly. It is particularly interested in the development of technical matters by the application of scientific methods. It brings together manufacturers and dyers and finishers and is a voluntary body. Funds are collected on a yarn usage basis (1/16d. per lb. on wool and worsted, 1/32d. per lb. on cotton and 1/16d. per lb. on rayon). Subscribers are entitled to representation and will receive reports of work done.

The Research Station is a branch of Torridon, the institute belonging to the Wool Industries Research Association, and is located in premises which have

recently been transferred from University College, Nottingham to the Nottingham and District Technical College. It has obtained new premises at Thorneywood House, Nottingham, acquired and reconstructed by the Wool Industries Research Association at a cost of well over £10,000, on the understanding that the hosiery industry will eventually discharge the liability. The Wool Industries Research Association developed this Station as a special hosiery service " introducing and supervising war-time shrink resisting finishes."

We strongly commend the establishment of the Hosiery Research Council and hope earnestly that the Station at Thorneywood House will develop into a Hosiery Research Institute of a magnitude and quality that are appropriate to the size and importance of the industry. We wish to acknowledge the excellent service which the Wool Industries Research Association has rendered to the hosiery industry by creating this nucleus of research work. We recommend that progress be made as rapidly as possible in the discharge of the Council's obligation to the Wool Industries Research Association, and that the Station should become the property of the Hosiery Research Council.

We suggest that the Hosiery Research Council in accordance with our principle of organisation enunciated above should represent a wider range of interests. In addition to representatives of hosiery manufacturers and dyers and finishers, there should be some representation of kindred associations (Wool, Cotton, Silk, Rayon, Nylon, other synthetic fibres) and Launderers and Machine Builders. Further, we recommend that the workers' and consumers' interest in research should be expressed and, finally, the body should be strengthened by having associated with it scientific persons of high standing and experience in research and other professional men or women. A liaison in this way could be established with the University and Technical Institutions in the hosiery areas. The Department of Scientific and Industrial Research should also be represented. Such an increase in the variety of interest would improve not only the technical ability of the Council to examine the work performed or make the best appointments, etc., but it would establish liaison with a number of groups whose enthusiasm for the venture is of significance.

Though we suggest a Council representative of more varied interests it should be clearly understood that we do not mean to suggest that this Council should decide the lines of investigation to be pursued. Scientific research can only be directed by those who have scientific knowledge, and in any research organisation the technical necessity of efficiency is that scientific capacity is mobilised. Scientific research problems present themselves to scientific minds, and when scientists are free to pursue their own chosen lines their knowledge grows organically. Lay direction of enquiry is not research ; it is clumsy " prodding." The success of the research organisation is to be judged by its fruits, though even in this respect it is necessary for the Council to be sure that fruit is or is not developing. Some research works through to " usefulness " only after a considerable time. To assist the Council in this function of evaluating the Institute is the purpose of our suggestion that it should include representatives of the Department of Scientific and Industrial Research and other scientists.

We recommend that the primary responsibility for the establishment of a research service for the industry should rest with the Hosiery and Knitwear Council. This body should appoint the Hosiery Research Council and receive reports on its progress. The Hosiery Research Council should appoint a

Director of Research, a person of scientific standing, who would be responsible to the Research Council for the internal working of the Research Institute.

In another chapter of this report we have suggested that a Hosiery Design Centre should be established, and that the cost of it should be defrayed by the funds of the Hosiery Research Council. A reference here to the appropriateness of this suggestion gives us an opportunity for emphasising the wide conception of research which we wish to commend to the industry. Design is the function of an artist and hosiery design is the function of an artist working with knitting machines. It is creative work, the producton of new forms—and the discovery of new forms of products is research. The Centre could be used as an experimental station in which the Director is concerned to discover what are the factors that determine those most elusive of all qualities of a people, fashion and taste.

A Research Organisation such as we envisage will cost something probably of the order of £40,000-£50,000 per annum, a proportion of which we hope will come from a grant from the Department of Scientific and Industrial Research, and the problem arises of making this provision. At present the Hosiery Research Council is making an appeal for voluntary subscriptions. We are of the opinion that the value of research is of benefit to the industry as a whole, bringing prosperity to individual firms and the community in general. Firms maintaining their own research departments are paying for them already; some of their present work would be transferred to a central organization.

It has been suggested to us that, on the principle that what benefits all should be paid for by all, the most equitable manner of distributing the expense would be that of a compulsory levy. The large firms with their own departments would benefit by the possibilities of economies in these establishments, and presumably they have great expectation from the possible new developments. Perhaps the smallest firms feel least able to invest in the general, long period development, but an all-in scheme would give them great value for money. The basis of the levy was a matter for careful consideration and various criteria of benefit and ability have been suggested, all of which, in the main, aim at a measure of the size of the firm. Turnover, profits, employees, yarn usage, machines, floor space have been examined.

After consideration of the various possibilities, we are of the opinion that subject to there being established appropriate differentials for the various types of fibres and counts, and the consideration of the possible desirability of a sliding scale based on quantities, the most equitable basis of determining the amount of the levy would be the weight of yarn delivered. *We accordingly recommend that legislative action be taken (or the powers of the Board of Trade exerted under the Services for Industry Regulations, if these are made continuative) to impose a compulsory levy on all hosiery manufacturers in accordance with the amount of yarn used. The Hosiery and Knitwear Council should advise on this matter.*

A compulsory levy, being of the nature of a tax, raises an important issue concerning the election of the Hosiery Research Council. We have made recommendations above concerning the diversity of interest which should be brought to focus in the general directions of research. The constitution and mode of selection of members of the Council we suggest should be made a function of the Hosiery and Knitwear Council. The general principle would be to ensure that the scientifically minded were directing the general policy.

In making our recommendation of a compulsory levy we are not unmindful of the fact that there are in existence already statutory levies on cotton and wool. In the case of rayon there is a residue of the war-time levy on home consumption, imposed as part of the scheme of encouraging exports, and this residue is allowed as a trade expense if it is devoted to research. There is a considerable body of opinion in the hosiery industry that maintains that part of the proceeds of these levies, being intended to assist in the development (by research among other means) of the respective yarn industries, should be given to the Hosiery Research Council, since hosiery is a user of all three. It is considered that in the case of wool and cotton (the rayon " residue " has not yet been used in research) the user-industries of wool and cotton weaving receive a share of the benefit, and other users, such as hosiery, do not. The research institutions which employ these funds, while producing research results on yarn which are of value to hosiery in common with weaving, have not pursued knitting research to any serious extent. Cotton has been considered as synonymous with Lancashire spinning and weaving, and wool as denoting the Yorkshire trade. (The Wool Industries Research Association has recently exercised itself considerably over hosiery affairs as we have noted above). If the existing levies were devoted to yarn research only then no objection would be raised, as the benefits would accrue equally to all users, including hosiery. If, however, they are to continue to be devoted to yarn and one particular use of yarn, then it would seem that there is discrimination against hosiery in favour of weaving.

The case of rayon under their new proposals is somewhat different. The ½d. per lb. residual of the war-time levy on home users is available without taxation if used for research, but it is not at present used for that purpose, and the Rayon Research Institute is to receive funds from rayon producers on a voluntary basis. As research should give a return on its expenditure the expenditure is an ordinary trade cost and no objection can be raised, or it may be regarded as investment on expansion paid out of profits.

A case seems to be made for an enquiry into the incidence of levies actual and proposed, and a decision which will rationalise the situation. We recommend therefore that the Government should take the necessary steps.

The proceeds of the levy would be, no doubt, supplemented by the Department of Scientific and Industrial Research as is the case of all such bodies. If there were associated with the Hosiery Research Institute any special services such as " general practitioner " or testing these would be subject to special fees But they are not research activities, even though it might be convenient to have them near to the Institute.

In our consultations with research institutions, firms with research departments, individual researchers and others, we have formed the opinion that there is a widespread desire for some form of overall Textiles Research Organisation. The debt which the hosiery industry owes to the British Cotton Industries Research Association at the Shirley Institute and the Wool Industries Research Association at the Torridon Institute is very great, and bears witness to the general value to the textile industries of research work conducted by institutions with special interests. That the various textile industries have much in common is an obvious fact to all, as the existence of the Textile Institute and the textile departments of Universities and Technical Colleges bears witness, but there are forces at work that make the institution of a co-operative organisation for the whole textile group a necessity. The revolutionary discoveries that are being

made in the production of artificial fibres are of great importance to all the users and potential users of these yarns. They may quite probably force upon the hosiery trade in particular, and the textile industries as a whole, an entirely new structure of production. One has only to consider a single case, the influence of nylon and its durability, to realise the significance of these changes. The principle of economy through co-operation would certainly seem to hold promise of a yield apart from these major changes that are taking place, but these introduce a note of urgency. One group of manufacturers has suggested the establishment of a Central Textile Research Information Association or Centre, to assemble and make easily available to all the textile industries the latest results of research. We cordially agree with the suggestion, but consider that an organisation should be conceived of far greater dimensions. We commend to the Hosiery and Knitwear Council the consideration of the ways and means by which the various textile industries might be brought into consultation, with the end in view of establishing some form of general textile research organisation.

Every industry employs specialists who, with their fellows in other industries, are members of their professional institutes or associations. These bodies define the nature of experience, training and competence in the performance of their duties, and their general practice is to promote the development of the professional techniques and knowledge. A professional body uninterested in research is a contradiction in terms. They collect and collate the new material discovered, keep their members informed of the latest literature by reviews and notices, arrange meetings for the reading of contributions made to the knowledge relevant to the professions, and in some cases organise actual research activity, investigations, surveys, etc. A person who claims professional status usually does so through obtaining recognition by his fellow practitioners.

The hosiery technologist can obtain professional status by admission as an Associate, Member or Fellow of the Textile Institute which is established by Royal Charter to further the general interests of the textile industry " particularly in relation to the acquisition and application thereto of scientific knowledge." It follows the methods outlined above and a fair number of members are to be found in the hosiery industry. There would seem to be room for improvement in this respect within the industry.

At the foundation of the industry which produces new ideas, whose workers are scattered among the industries which provide consumer services, lie the *Universities*. The traditional social role of these institutions is to conduct fundamental research. In relation to the research which takes place in the industrial field they are the makers of the tools of research, the techniques of analysis, the general principles which, in their complex combinations, are the techniques of " practical " living. There is a continuous flow of new fundamental ideas in all the sciences of man and things out to the field of industry, and the products and experiences of industrial practice flow back, to improve the efficiency of these basic researchers, and suggest new investigations. The Universities also train researchers, and co-operate in the training of professional workers whose necessary knowledge is of the order of fundamental sciences. It is not surprising therefore that there is no extensive development of hosiery research in Universities. There are one or two textiles departments, and graduates in technologies are in some cases hosiery students. The professional specialists are frequently graduates or diplomees, and this we would expect, for their tools are the basic sciences. Chemists, physicists, biologists, engineers,

belong to this group, and their research work in industry is closely akin to research work in the Universities, and sometimes identical with it.

The *Technical Colleges* lie nearer to the " practical " man, and they have developed to meet the needs of industrial training. They are primarily teaching institutions, and they direct their training to the practice of industrial functions. Research is to these institutions a necessity of good teaching, for it is the only guarantee of keeping the teachers up-to-date. In some cases Technical Colleges have moved towards the Universities in the character of their work, and considerable research is effected. Some hosiery research has been produced but the main energy has passed into training in the practice of hosiery technology. On the commercial side of these colleges the same principle has guided the work. The Percy Committee on Higher Technological Education contemplates the establishment of Royal Colleges of Technology where students may be trained to acquire a title (Associate of R.C.T.) " . . . which indicates that their technological qualification is equivalent to the award which their fellows studying Medicine, Law, Science, or the Humanities can acquire." In other words, they are to be of University standard, but the bias should be towards the application of knowledge. The recent circular issued by the Ministry of Education (Circular 94, dated 8.4.46) on Research in Technical Colleges strongly recommends that Technical Colleges should undertake research work of value to local industry, with the proviso that the training functions of the Colleges are not frustrated. " The value of the work is two-fold; first it brings the College and teaching staff into close contact with industry and commerce to the general benefit of students and teachers alike and, secondly, it establishes direct relations between industry and commerce and the advance work of the College. This type of investigation, being mainly of a development character, will be of particular service to local industry and especially smaller firms."

The hosiery industry maintains a lively association with the Technical Colleges of Nottingham, Leicester, Hinckley, Hawick and Glasgow, and elsewhere. The association is chiefly made through training schemes for workers of different types in the industry. There is a possible development of research here, but there seems little doubt that the research that is appropriate to technological institutions must of necessity be mainly conducted in industrial research institutes. The hosiery industry should, however, accept the invitation implied in the circular.

One of the most outstanding features of the developing research organisation of this country during recent years has been the increasing share taken by the *State*. It is essential that the hosiery industry should be aware of this. All researchers are members of one army of attack on new knowledge, and the State has decided to take a lead in inspiring research, conducting research, and providing means for research. We do not propose to survey all its activities and reports of censuses of production, trade enquiries, technical investigations, etc. This is a function which the Hosiery Research Council can perform for the industry in its own best way. There are, however, two institutions sponsored by the Government which we note with approval as recent establishments, the British Institute of Management referred to elsewhere, and the Council of Industrial Design. In both of these cases we have a notable lead given to the application of science to things that have been regarded as far removed. But we think it fit that we should indicate that there are great research hopes, based on the increased means that are to be made to Universities and technological

institutions, which should assure the industry that men and means to research will be available in increasing numbers and quality. Further, through the Department of Scientific and Industrial Research, there are funds available to assist in the specific research activities of all industries so long as the results are made available for the community as a whole, and the industry concerned in particular.

Research is useless unless its results are communicated to those who have to apply them. This imposes upon the Hosiery Research Council an imperative duty. A highly specialised or technical language is frequently necessary for the right conduct of research, but it is not always understood by the person who has not acquired the special terminology, though he may be of a high order of intelligence, and he may have the responsibility for implementing the suggestion arising from the research. Translation is required into plain English as far as possible, and an industrial relations service consisting of persons able to speak both languages is therefore of first importance. The Shirley Institute has chosen in the main to employ the scientifically-minded layman for this purpose, though others may consider the scientific person with understanding of the layman's difficulties equally good; the end purpose requires knowledge of the research and language of the layman. Such liaison officers must work through the medium of lectures, demonstrations, informal talks and consultations. They carry a two-way traffic—research products outwards, and problems that are troubling industry inwards.

There are good trade journals in the hosiery industry, and with the development of research their usefulness will be enhanced. The possibility of brochures, pamphlets, magazines, etc., will suggest themselves to a good publicity officer.

But written and spoken words are not sufficient of themselves. The techniques of film projection, diagram, lantern slide, should be pressed into service along with demonstration, museums, design centre, organised " open days " at the research institute. Organised visits to the institutions maintained by the ancillary professions or industries should form an integral part of this work, as for example, colour and lighting demonstrations. Public institutions such as the Home Office Industrial Museum, which devotes much attention to factory amenities, are part of the same service of communication.

CONCLUSIONS AND RECOMMENDATIONS

(*a*) We recommend that the Wool Industries Research Association Station in Nottingham be developed into a Hosiery Research Institute.

(*b*) We recommend that a Hosiery Research Council be set up under the auspices of the Hosiery and Knitwear Council, and be so constituted that a wide range of representation of research interests is effected. The constitution should be determined by the Hosiery and Knitwear Council.

(*c*) We recommend that direction of research should be controlled by a Director of approved scientific status.

(*d*) We recommend that the Hosiery Research Council should be responsible for maintaining a Hosiery Design Centre.

(*e*) We recommend that a compulsory levy be imposed, upon a yarn usage basis, on all hosiery manufacturers.

(*f*) We recommend that the Hosiery and Knitwear Council should take steps towards the establishment, with other textile industries, of a general Textile Research Organisation.

(*g*) Close liaison should be established by the Hosiery Research Council and Institute with Universities, Technical Colleges, textile and other professional and scientific institutes, other research associations and State research organisations.

(*h*) We recommend that an efficient industrial relations service be developed to ensure the widest dissemination of research findings amongst the industrialists who are expected to apply and develop them.

XII. Design

THE appreciation of design, colour and line is now common to women of all classes; the importance of good design covers the whole range of the women's dress trade, from the fashion house at one end of the scale to the factory producing garments in large quantities at the other, and as a consequence the term "designer" is applied to a large number of people employed at different levels and in various occupations. Even if we eliminate fashion drawing, which is essential to a "fashion designer" who is solely concerned with the illustration of clothes on paper, or if we further eliminate the comparatively few persons who as a result of outstanding natural ability are occupied in work of a purely original and creative kind, we are still left with a wide field in which large numbers of well trained designers, combining their own originality with the adaptation of the original ideas of others, and possessing practical knowledge and business sense, can find a form of employment which is essential to the recovery and development of British trade. This applies so forcibly to the knitted outerwear section of the hosiery trade that, while we have not attempted to provide for conditions which must vary factory by factory, or to distinguish between the skill and qualifications required to design one type of garment as compared with another, we have come to the following conclusions on the subject of designers in the knitwear trade. We have confined ourselves to this aspect to the exclusion of stitch designing, which is a mechanical operation.

(*a*) The greatest need and the greatest opportunity is for that class of designer which can best assist what was, before the war, a rapidly expanding industry providing a high rate of employment—the production of well-made knitted outerwear at popular prices. This calls for practical as well as artistic training, and the acquisition of technical knowledge for the expression of ideas in a practical way, a knowledge of cut, line and making-up processes as well as of materials, prices and factory detail.

(*b*) The workroom has probably produced the most successful designers; none the less we are satisfied that Art Schools and Colleges are the right places for training so long as they are properly equipped, and the teaching of design is not divorced from practical training. Education has done much to stimulate appreciation of colours, style and design, and we hope that the Education Authorities will increasingly adapt their organisations to meet a change they have themselves done so much to create, and that their first provision will be for the needs of local industry.

(*c*) The support of industry is no less important; we are glad to see that trade advisory committees are in existence, and that facilities are offered to students to visit factories, and even to work in them part-time during the vacation. The rates of pay have been improved and the designer given a position of greater standing, but it is deserving of still better status as a profession, offering great scope for people who have a sense of artistic values and can apply them competently and technically to industry.

We appreciate that there are many small and medium-sized firms within the industry who, individually, lack the resources necessary to carry out any extensive research into the many important aspects of design, but we are of the opinion that this difficulty could be overcome if the whole industry combined

its resources to establish an organisation which could provide a comprehensive service to all firms both large and small. We consider that the establishment of such an organisation could best be achieved with the assistance of the Council of Industrial Design, and we recommend that the industry should discuss with this body the preliminary steps necessary to establish a Hosiery Design Centre. We consider that the functions of such a Centre should include the following :—

(*a*) To keep the industry fully informed on the development of design both at home and abroad. This would include the maintenance of a library and reading room where books and periodicals would be available for study.

(*b*) To advise on the suitability of designs for individual markets.

(*c*) To co-operate with the industry, Art Schools and Technical Colleges in co-ordinating the training of hosiery and knitwear designers.

(*d*) To maintain a close liaison with all other research activities and with the manufacturers and distributors.

(*e*) To arrange exhibitions of well designed garments for the information of both British manufacturers and foreign buyers.

We estimate that the cost to the industry would be in the neighbourhood of £5,000-£6,000 per annum. Spread over the whole industry, this figure would average for firms employing, say, 100 workers, £5 a year, a very small sum indeed in comparison to the valuable information and service which would be at the disposal of every firm. This annual sum might well be allocated from the funds of the Hosiery Research Council.

CONCLUSIONS AND RECOMMENDATIONS

(*a*) We recommend the establishment of a Hosiery and Knitwear Design Centre to assist the industry in raising the standard of design, and to serve as a central point at which advice and information will be available.

(*b*) We recommend that the industry and the Educational Authorities should work together as closely as possible for the improvement of the supply, standard and status of designers in all sections of the industry.

XIII. The Hosiery and Knitwear Council

IN our explanation in Chapter I of the structure of this report we have referred briefly to a permanent organisation called the Hosiery and Knitwear Council, which we propose should be set up. In other chapters we have suggested various matters with which this Council should be concerned and, without repeating these, we now outline the broad functions, constitution, and procedure which we regard as appropriate for the Council.

FUNCTIONS

The Council would act in an advisory and consultative capacity, both to the Government and to the industry, on matters of broad policy. It should not, however, deal with any matters which are normally handled by joint organisations of Employers and Trade Unions in connection with wages and conditions of employment. We believe that there is need for an organisation such as this :—

(*a*) to be a channel of communication and a recognised means of consultation between the Government and the industry ;

(*b*) to advise the Government from time to time on conditions within the industry, and upon steps which may be desirable to bring its resources into the fullest use either by :—

(i) Voluntary action by the industry,

or

(ii) Statutory enforcement :

(*c*) to maintain contact with other organisations whose activities affect the general interests of the industry ;

(*d*) to advise the industry, through the established trade organisations, of Government policy ;

(*e*) to institute and pursue investigations which may benefit the industry, and to deal with all other questions affecting the industry of a specific or general character which may be referred to it.

None of these terms of reference is designed to effect any diminution in the enterprise and collective responsibilities of the industry acting through its established organisations, of which the fullest use should be made whenever possible.

CONSTITUTION

We have given much thought to the constitution of the Council, and have come to the conclusion that a maximum of one-quarter of the members including the chairman, should be Government nominees, though not necessarily civil servants. The other three-quarters of the members should be equally provided from manufacturers and workers, nominations being put forward by recognised organisations in the industry. We have spent much time in discussing the appropriate divisions of the nominations as between the various organisations, and have come to the conclusion that this can most conveniently be settled by agreement between these organisations.

It is of the utmost importance that the members shall be persons of outstanding ability, and we are confident that this point will not be overlooked. It is also important that minority interests should be represented, and in particular that provision should be made for Scottish representation.

Equality of representation between manufacturers and workers is a matter on which strong opinions are held, and we think it advisable to set out here our reasons for deciding that the workers should have equal representation. These are :—

(*a*) In matters affecting the welfare of the industry as a whole the interests of the workers are inseparable from those of the manufacturers, and the prosperity of the industry is equally important to both.

(*b*) The overwhelming majority of persons who depend directly on the industry for their livelihood are workers.

(*c*) Experience during the war, particularly in industries under the heaviest pressure, has proved the value of equal participation by the workers in decisions on broad industrial policy, with the result that this has now become a permanent feature in many progressive industries.

A reservation on equal representation : On this question of constitution Messrs. Bussens, Johnson, Kempton and Peshall, employer members, are not in agreement with the remainder of the Working Party. Whilst agreeing that workers, alike with employers, have interests in the progress of the industry, they are convinced that, on an Advisory Council charged with functions and responsibilities such as we have described, these interests could be adequately protected and furthered on matters of broad principle, by a comparatively small number of persons, and that the application of these principles to the ten distinct types of manufacturing sections which exist in the industry will necessitate the advice and guidance of a larger number of employers possessing specialised technical and executive knowledge and experience. For this reason they recommend that the Council be comprised of 20 persons excluding the Chairman divided as to 50% of representatives of manufacturers, and as to 50% of representatives of Government and workers and others, if any, whose inclusion may be decided upon after consultation.

A reservation on the Scottish interest : Messrs. Grimmond and Whipp, who are respectively employer and worker members from Scotland, also disagree with the constitution as stated earlier because, in their view, such representation on a National Body, and any sectional sub-committee of that body, as Scotland might receive would be, by reason of the great diversity of Scottish production in the knitting industry, quite inadequate. It would be impossible for the representatives either to keep themselves fully informed on all aspects of the work, or travel to meetings and run their own businesses, or do their own jobs, at the same time. They regard a separate Scottish Council as necessary to ensure, for reasons other than those stated above, close collaboration with official or semi-official bodies established to deal solely with Scottish affairs, such as the Scottish Council (Development and Industry) and Scottish Regional Control (Board of Trade) which could not be easily afforded under one national advisory body for the hosiery industry. They point out that the Board of Trade and the Ministry of Labour and National Service recognised the necessity for a Hosiery Rationing Committee, a War Emergency Committee and a Re-

Employment Committee for Scotland. It has been generally recognised and accepted that these bodies performed a valuable function during a critical period. As the future is still uncertain and critical, it is their opinion that separate Advisory Councils for England and Scotland are as necessary in the future.

PROCEDURE

The Council should be recognised by the Government as the accepted means of consultation with the industry, and should be a non-voting body. We assume that it will have access to all statistical information collected by the Government, and to expert advice, both from the Government and the industry, and that agreement on the matters considered will normally be reached after discussion in the light of this information and advice. At the same time, we recognise that matters of importance must not be left in abeyance owing to lack of unanimity. The chairman, having obtained the views of the Council, should, in such circumstances, advise either the Government or the industry, or both as appropriate, of the views held, including his own.

CHAIRMAN AND STAFF

An independent chairman of high standing should be appointed who will devote such time as is necessary to his duties. His remuneration, which should be commensurate with his responsibilities, should be paid by the Government, and he should be provided from Government sources with such staff as he finds necessary.

XIV. A General Survey of Conclusions and Recommendations

WE have dealt with the individual sections of the industry and have considered the various aspects of the position in the preceding chapters. We have stated our conclusions and recommendations following the consideration of each subject. We now conclude our report with a brief statement which indicates generally our main conclusions and refers to related recommendations. We wish to emphasise that this statement does not purport to be exhaustive, and reference should be made for full interpretation to earlier chapters, which include recommendations not mentioned here.

1. PROSPECTS: Long-term prospects for the hosiery industry as a whole are excellent. Provided that the industry continues to show initiative and boldness in planning development, and that early steps are taken to deal with many existing obstacles and difficulties, we are confident that sales, both home and overseas, will settle at an appreciably higher level than before the recent war.

2. ORGANISATION: A permanent central body* of high standing is needed to act in an advisory and consultative capacity to the Government and the industry, to institute and pursue investigations on matters of importance to the industry, and to advise on, and deal with, any questions of a specific or general character which may be referred to it by the Government or the industry. We have called this central body " The Hosiery and Knitwear Council," and have suggested its functions, constitution and procedure in Chapter XIII.

3. FINANCE.—Many firms in the industry, particularly the smaller concerns, have suffered from shortage of capital in the past, and while there are sufficient cash resources in the industry to finance the replacement of worn plant, we consider that many firms will eventually need to obtain increased working capital on account of higher working costs. Outside capital will be needed to finance expansions such as we have suggested, and for the reasons stated in Chapter VI we consider that, though such capital may be substantial (particularly for the women's fully fashioned stocking section), it will be forthcoming either from the Money Market or from one of the Government-sponsored financial institutions.

4. PROFITABILITY.—The major factors, other than general economic factors, which tended to weaken unduly the financial structure of the industry were :—

(*a*) fluctuations in raw material prices ;

(*b*) uneconomic competition, particularly in the home market, from foreign goods the export of which was subsidised, or which were sold in the United Kingdom at prices lower than in the country of origin.

These factors are outside the control of the industry, and we recommend action by the Government to ensure greater stability of yarn prices, and to restrict subsidised or " dumped " imports. (See Chapter IV, Recommendation (*d*) ; Chapter IX, Part C, Recommendation (*a*).)

* Messrs. Grimmond and Whipp consider that there should be a separate body for Scotland for the reasons given in Chapter XIII.

5. COSTINGS.—Improvement in the existing costing technique of the industry is vital to the efficient running of the manufacturing units and for the determination of selling policy. We have recommended encouragement of the use of standard costs, the setting up and publication of standard costs for a number of representative articles, and the introduction of an appropriate uniform system of costing, and uniform terminology, analysis and classification of expenditure (Chapter VI, Part B, Recommendations (*a*) and (*b*)).

6. YARN SUPPLIES.—Full development of the industry to increase exports and provide supplies of hosiery previously obtained from abroad is being hindered, and may be prevented, by short-term yarn shortages. It is essential that all avoidable difficulties should be prevented, and to this end action by both the Government and the industry is necessary. We have therefore included the following in our recommendations :—

(*a*) That Government control of allocation of yarn shall be maintained during the period of shortage (Chapter IV, Recommendation (*a*)).

(*b*) The setting up of a sub-committee or committees including hosiery manufacturers, yarn producers and throwsters to ensure maximum collaboration between these industries in solving short and long-term problems of mutual concern (Chapter IV, Recommendation (*c*)).

(*c*) Centralisation of demand on a limited range of counts where appropriate (Chapter III, Part D, Recommendation (*b*)).

7. BUILDINGS.—A substantial amount of building work is needed, both to provide for necessary expansions, and for the reconstruction or replacement of many buildings to render them suitable for the carrying out of a first-class production plan.

In particular a large amount of new building work will be needed to provide for the substantial expansion of the women's fully fashioned stocking section, which expansion we regard as important. Our recommendations include :—

(*a*) All reasonable facilities and assistance by the Government (Chapter III, Part A (ii), Recommendation (*d*); Chapter III, Part G, Recommendation (*b*)).

(*b*) Careful consideration of the long-term labour supply prospects in areas where expansion is contemplated (Chapter III, Part A (ii), Recommendation (*g*); Chapter VIII).

(*c*) Design of buildings to permit the utmost flexibility of layout (Chapter III, Part G, Recommendation (*b*)).

(*d*) Avoidance of duplication in designing new buildings where appropriate (Chapter III, Part A (ii), Recommendation (*d*)).

8. MACHINERY AND EQUIPMENT.—Extensive re-equipment with improved types of machines, or with existing machines converted to give a higher performance, is necessary in most sections of the industry. Due to various factors the industry's plans for re-equipment and expansion are well below the level we consider necessary, and urgent action is called for, particularly in the case of women's fully fashioned stockings.

We recommend action under the following main heads :—

(*a*) Reconsideration of their plans for re-equipment and expansion by firms in the industry (Chapter III, Part A (i), Recommendation (*d*); Part A (ii), Recommendation (*e*)).

(*b*) A greater degree of technical co-operation among the machine builders, and the full use by them, where appropriate, of the large-scale production methods used during the recent war (Chapter V, Recommendations (*a*) and (*g*)).

(*c*) Joint consultation arrangements between the hosiery, the machine building and the machine needle industries (Chapter V, Recommendation (*b*)).

(*d*) Assistance by the Government to ensure the provision of adequate supplies of machinery, particularly fully fashioned stocking knitting machines, including assistance in production, and where necessary, in the acquisition of supplies from overseas (Chapter III, Part A (i), Recommendation (*e*); Part A (ii), Recommendation (*e*); Part C, Recommendation (*b*); Part E, Recommendation (*b*); Part F, Recommendation (*f*); Chapter V, Recommendations (*c*) and (*d*)).

(*e*) The arrangement of some preference in the supply of machinery to British hosiery manufacturers who can show immediate need for it to develop their exports (Chapter V, Recommendation (*e*)).

9. LABOUR SUPPLY.—The industry will have the gravest difficulties in obtaining, within a reasonable time, sufficient numbers of extra workers to make up for war-time losses in most areas. In particular, the present rate of return of women workers is alarmingly low, and the prospects of recruiting sufficient numbers of juveniles are not promising. The many and various steps which we consider necessary to combat this position include the following :—

(*a*) Improved personnel management, welfare and similar arrangements which contribute to the attractiveness of the work and reduce labour turnover.

(*b*) Appropriate recruitment publicity, including local arrangements and general arrangements.

(*c*) The use of modern training arrangements designed to promote economy of working effort and minimum training times. Special training arrangements for fully fashioned machine operatives (Chapter III, Part C, Recommendation (*a*); Part E, Recommendation (*a*); Chapter X, Recommendation (*d*)).

(*d*) The organisation of production in disperal units (with due regard to wages and conditions), and the location of new projects where labour prospects are brightest (Chapter III, Part A (ii), Recommendation (*f*); Part G, Recommendation (*c*); Chapter VII; Chapter VIII).

(*e*) Planning of production to avoid short-time working (Chapter III, Part F, Recommendations (*d*) and (*e*); Chapter IX, Parts A and B, Recommendation (*d*)).

(*f*) Revision of production methods and of trade practices, and closer study and application of job-rating techniques to obtain better utilisation of labour (Chapter III, Part A (iii), Recommendations (*c*) and (*e*); Part C, Recommendation (*c*); Part G, Recommendation (*f*)).

10. MATTERS AFFECTING PERSONNEL.—Improvement in personnel management, welfare, training and similar arrangements is necessary in many factories to enhance the attractiveness of the industry, to reduce labour turnover, and to increase the ratio of output to human effort. Our recommendations include :—

(*a*) Central arrangements for a service to advise and assist the industry on these matters, including advice on personnel management and on the recruitment and training of production technicians (Chapter X, Recommendations (*a*), (*c*), (*d*) and (*e*)).

(*b*) Collaboration between the industry, Education Authorities and other appropriate bodies concerned with technical, supervisory and management training and status, in the development of suitable training courses and professional standards. Also the provision of scholarships for home and foreign study (Chapter X, Recommendation (*h*)).

(*c*) The speedy establishment of a National Joint Apprenticeship and Training Council or similar body (Chapter X, Recommendation (*b*)).

(*d*) Obligatory arrangements for avoiding danger to eyesight of operatives on fine work such as linking, and the provision of satisfactorily designed seating (Chapter X, Recommendations (*j*) and (*k*)).

11. PLANNING OF PRODUCTION.—Production planning was not easy before the war owing to the constant changes in designs, styles or colours which were required, and the relative absence of these factors during the war contributed substantially to the increased efficiency in that period. Pre-war conditions will inevitably tend to re-establish themselves when the balance of supply and demand becomes more even, and it is essential that developments should be guided on the right lines. We have therefore recommended action by the hosiery industry, the distributors and the Hosiery and Knitwear Council to encourage bulk ordering and the levelling out of seasonal fluctuations (Chapter III, Part F, Recommendations (*d*) and (*e*); Chapter IX, Parts A and B, Recommendations (*a*) and (*d*)). We have also recommended the provision for the industry of a full statistical service, with interpretations of the statistics issued (Chapter VI, Part C, Recommendation (*a*)).

12. PRODUCTION METHODS AND SYSTEMS.—There is considerable scope for advances in methods of production, quality control and utilisation of labour. Our recommendations under this head include :—

(*a*) Study of U.S. practices in certain respects and their application where appropriate (Chapter III, Part A (ii), Recommendation (*h*); Part A (iii), Recommendations (*e*) and (*f*)).

(*b*) Study and application where appropriate of modern techniques developed during recent years in other industries (Chapter III, Part G, Recommendation (*e*)).

(*c*) Investigation of the relative merits of different methods of production and labour utilisation employed in the United Kingdom and publication of the conclusions reached (Chapter III, Part C, Recommendation (*c*)).

(*d*) Recruitment and training of technicians for the application of production engineering type methods to hosiery production (Chapter X, Recommendation (*e*)).

13. WOMEN'S FULLY FASHIONED STOCKINGS.—There is urgent need for substantial expansion of fully fashioned stocking production, and we have recommended immediate action by the Government and the industry on many related matters, of which the following are the most important :—

(*a*) Early arrangement of facilities for necessary building programmes in appropriate areas (Chapter III, Part A (ii), Recommendations (*d*) and (*g*)).

(*b*) Immediate action by the hosiery industry, the machine builders and the Government to secure the installation of 1,500/2,000 new knitting machines and associated ancillary machines during the next five years at most (Chapter III, Part A (ii), Recommendation (*e*); Chapter V, Recommendations (*c*) and (*d*)).

(*c*) Arrangements for training fully fashioned knitting machine operatives.

14. QUALITY AND OTHER MATTERS CONCERNING HOSIERY PRODUCTS.—Some goods, both imported and home produced, which were sold in the United Kingdom before the recent war were below the quality standard which the consumer had a right to expect. Also, there was considerable room for improvement in relation to proper marking of goods, sizes and standards of shrink resistance and relaxation. Arrangements are needed to prevent a recurrence of these conditions, and to that end we have included recommendations on the following matters :—

(*a*) Review of the effect of conventional prices on quality, and of sales of price maintained goods priced in accordance with advertising expenditure rather than quality (Chapter IX, Parts A and B, Recommendation (*c*)).

(*b*) The formulation and setting up of a code of trading conduct, and the arrangement of certain agreed standards (Chapter IX, Parts A and B, Recommendations (*a*) and (*b*)).

15. DISTRIBUTION AND SALES.—Arrangements for the correlation of ordering with continuity of production have generally left much to be desired as regards the industry as a whole, though the policies of some distributors have been satisfactory in this respect. There is an urgent need for closer collaboration between the hosiery and distributive industries, and we have recommended the setting up of a Standing Committee consisting of the various interests concerned to advise both industries through the Hosiery and Knitwear Council (Chapter IX, Parts A and B, Recommendation (*a*)).

Imports.—The industry suffered from unfair competition before the war from imports of subsidised and "dumped" goods, and we have recommended restrictions on such imports, and early publication of the decisions taken about the German, Italian and Japanese hosiery industries (Chapter IX, Part C, Recommendations (*a*) and (*b*)).

Exports.—We consider that the volume of hosiery exports could be maintained at three or four times the pre-war level. We have recommended that, to take full advantage of the possibilities, a marketing company to arrange bulk production and sale to appropriate markets, and an organisation to undertake market research and publicity on behalf of the industry, should be set up (Chapter IX, Part C, Recommendations (*c*), (*d*) and (*e*)).

16. RESEARCH.—Until recently the industry as a whole took little interest in research, and arrangements for the setting up of a research establishment concerned with all aspects of knitting and other matters of special interest to the industry are needed. Our recommendations include :—

(*a*) A statutory levy for hosiery research on the yarn used by the industry instead of the voluntary levy which the industry is in process of arranging (Chapter XI, Recommendation (*e*)).

(*b*) A Hosiery Research Organisation controlled by a Director of approved scientific status responsible to a Hosiery Research Council whose con-

stitution should be determined by the Hosiery and Knitwear Council (Chapter XI, Recommendations (*b*) and (*c*)).

(*c*) Close liaison between all bodies interested in textile research, and an efficient service for dissemination of research findings to the industry (Chapter XI, Recommendations (*f*), (*g*) and (*h*)).

17. DESIGN.—An improvement in the standard of design is necessary to provide for the increasing numbers of discerning consumers, and to promote exports. For this purpose we have recommended the setting up of a Hosiery Design Centre, and steps for the improvement of the supply, standard and status of hosiery designers.

(Signed)

CAROLINE HASLETT (*Chairman*)
SUSAN BIRD (Trade Unionist)
P. BUSSENS (Employer)
J. CHARLESWORTH (Trade Unionist)
L. FOYSTER (Independent)
WM. GRIMMOND (Employer)
C. G. GROOCOCK (Trade Unionist)
G. W. JOHNSON (Employer)
T. W. KEMPTON (Employer)
H. M. MOULDEN (Trade Unionist)
S. F. PESHALL (Employer)
W. C. PUCKEY (Independent)
ARTHUR RADFORD (Independent)
GLADSTONE SMITHIES (Independent)
A. WHIPP (Trade Unionist)
R. E. YEABSLEY (Independent)

J. WRIGHT (*Secretary*)
KENNETH P. BROWN (*Assistant Secretary*)
EDYTH M. KING (*Secretary of the Scottish Sub-Group*)

June 29th, 1946.

Letter about fully fashioned stocking machinery from the Chairman to the President of the Board of Trade.

DM/SR 27th August, 1946.

THE RT. HON. SIR STAFFORD CRIPPS, K.C., M.P.,
The Board of Trade,
Millbank, S.W.1.

Dear Sir Stafford,

HOSIERY WORKING PARTY

As you know, the Working Party were gravely concerned about the prospects of obtaining early supplies of fully fashioned stocking machinery sufficient to provide for the expansion which they regarded as necessary. This concern was expressed in Chapter V of our report, which refers somewhat critically to the Government's delay in making definite arrangements to assist British production of this machinery. I was very pleased to hear from your Department that such arrangements have now been made and am glad to say that leading hosiery manufacturers who have heard about this position, have already told me of their appreciation and approval.

I therefore feel that I should write to you expressing my satisfaction with the progress made and would like you to regard this letter as a personal addition to the report.

Yours sincerely,

CAROLINE HASLETT,
Chairman,
Hosiery Working Party.

APPENDIX A

List of Persons who were Co-opted on to Sub-Groups

COSTINGS SUB-GROUP	H. Kennewell, Esq.
PRODUCTION SUB-GROUP	
Cottons Patent Section :	W. Armstrong, Esq. W. Bent, Esq. W. Marchbank, Esq.
Cut Garments Section :	P. C. Bell, Esq. H. Kennewell, Esq. E. Westnidge, Esq.
Flat Bar Section :	R. Y. Gillan, Esq. H. Haddon, Esq.
Glove Section :	Miss E. Stewart W. F. Anderson, Esq. R. Fraser, Esq. R. Y. Gillan, Esq. J. Hume, Esq. J. C. McGeorge, Esq. R. H. Munro, Esq.
Stockings and Socks Section	G. Macdonald, Esq. C. H. Meadows, Esq. A. R. Taylor, Esq. J. G. Walton, Esq.
Lighting, Power Transmission, Prime Mover and Heating Section :	W. N. Coulson, Esq. J. Mould, Esq. H. W. Perkins, Esq. J. G. Winterbottom, Esq.
SCOTTISH SUB-GROUP	J. Dougherty, Esq. R. Y. Gillan, Esq. J. R. Hood, Esq. W. Marchbank, Esq. R. M. McClure, Esq. B. Montgomery, Esq. J. Pettigrew, Esq., M.B.E. G. A. Ross, Esq. Miss E. Stewart C. M. Stuart, Esq.
WELFARE, TRAINING AND ORGANISATION SUB-GROUP	Mrs. F. Solomon

APPENDIX B

List of main organisations and Government Departments from whom oral evidence has been received

Air Ministry (W.A.A.F.)
British Cotton Industry Research Association
British Hosiery Manufacturers' Association
British Rayon Federation
Co-operative Movement
Council of Industrial Design
Drapers' Chamber of Trade of Great Britain and Ireland
Hosiery and Knitwear Export Group
Institute of Labour Management*
Joint Committee of Hosiery Machine Builders and Hosiery Manufacturers
Joint War Emergency Committee
Leicester Yarn Agents' and Merchants' Association
Industrial Welfare Society
Midland Hosiery Dyers' and Finishers' Federation
Ministry of Labour (including the Factory Inspectorate)
National Association of Outfitters
National Hosiery Manufacturers' Federation
National Institute of Industrial Psychology
Retail Distributors' Association
United Committee of Light Clothing Associations
War Office (A.T.S.)
Wholesale Textile Association
Wool Industries Research Association

In addition evidence both oral and written was received from persons, firms and organisations too numerous to mention.

* Since renamed "The Institute of Personnel Management."

APPENDIX C

Memorandum on Lighting, Power Transmission, Prime Movers and Heating in the Hosiery Industry

Submitted to Miss Caroline Haslett, C.B.E., and Members of the Hosiery Working Party, by a Committee consisting of W. N. Coulson, Esq., H. W. Perkins, Esq., J. G. Winterbottom, Esq., under the Chairmanship of John Mould, Esq.

LIGHTING, POWER AND HEATING

In late years there have been great strides in the sciences of lighting, and heating and the generation and transmission of power. On the whole, however, the hosiery industry has not been very ready to take advantage of these advances, although there are signs that it has recently begun to realise their value.

While there are, of course, a number of firms fully alive to the importance of efficient heating, lighting and power installations, it is only too often that they are undoubtedly behind the times.

Consider the provision of lighting; this has unfortunately often been considered by the management as a necessary evil, making an irritating addition to the overheads in the cost of production, rather than as an aid to efficiency. As such it has, therefore, been treated with scant respect, and the initial and running costs have been kept to the minimum. The effect of inadequate lighting on the quantity and even more on the quality of production, due to eye strain, etc., on the part of the worker, has been very little considered. It is clear, however, from the many reorganisations and new installations being projected that the industry is becoming "light-conscious," and it is important, therefore, that all aspects of the problem should be considered. In the main body of this memorandum specific recommendations are made for the various processes of the hosiery industry.

Heating systems, on the other hand, have suffered from indifference rather than from parsimony, as the cost of fuel has been so low in the past that it has hardly been felt worth while to pay attention to those details of heating installations that make all the difference between efficient and inefficient operation. During the war, however, the scarcity of coal and its sharp rise in price have given an impetus to the critical examination of heating systems, old and new. In particular, the possibilities of thermal insulation are now being considered with increased interest.

In general, heating for the hosiery industry is very similar to that required for any other sedentary occupation, but there are certain sections in which special conditions obtain. For example, the manufacture of fully fashioned stockings demands particular attention to space-heating. In some factories in which steam or hot water processing is carried out, the design of the heating system may be influenced by the process work done.

Closely connected with the use of steam for heating or process work, is the problem of the prime movers used in the industry. Before a reliable supply of

electricity was generally available, many hosiery firms installed what were then the most up-to-date steam-driven prime movers, either to generate a private supply of electricity or to provide motive power directly through line shafts and belting. As the years passed and more efficient machines were developed for public generation of electricity, the inefficiency of these old independent prime movers was still rendered relatively unimportant by the low cost of coal. Here again, war-time changes in the coal supply have encouraged the change to a more efficient source of power, whether this is the public electricity supply or, where steam is used for other purposes, a more efficient private electrical generator. In the absence of public supplies of electricity, oil engines have been used for power purposes. But in the present national economy, the use of imported fuel must be regarded as undesirable.

The early use of small reciprocating engines, to provide motive power direct, is clearly responsible for the methods of power transmission prevailing in the industry. The electrical transmission of power shows many advantages over the older ways, and a full discussion is given in this report of the degree to which individual drive should be applied to the machines used in hosiery manufacture.

LIGHTING

INTRODUCTION. Previous Government investigation on lighting has proved that improved lighting brings an immediate response in improved production. The quality of production is more consistent and there is less waste; there are fewer accidents since the operatives can see more clearly; and the working area is kept cleaner as the brighter atmosphere promotes good " house-keeping."

When considering lighting, attention must also be paid to the allied problem of colour. Much can be done by careful colour-scheming to prevent eyestrain, and focus attention on the work being performed; and " functional " painting of machine parts, pipework, etc., can be a useful aid to safety.

NATURAL DAYLIGHT. Daylight is cheap but is seldom used to the fullest advantage in industry. From the lighting point of view, the single-storey factory with north skylights has an advantage over the multi-storey building, but it is lost if machines and benches are not well placed in relation to the skylights. To obtain the greatest benefit, benches and machines should be arranged parallel to the axis of the skylights.

In large multi-storey buildings where some operatives are obliged to work a considerable distance from side windows; where daylight is shut out by nearby buildings; or where the natural daylight is inadequate for the particular process in operation, permanent supplementary artificial lighting should be installed, to raise the illumination to the required standard.

Failure to keep windows and skylights clean, or to raise blinds, seriously limits the amount of natural daylight penetrating to the workroom.

At night, windows become a source of loss, and to prevent this, they should then be covered with light-coloured blinds or curtains to reflect back the artificial light into the room.

GENERAL RECOMMENDATIONS FOR ARTIFICIAL LIGHTING. There are two notable publications which deserve serious study by those concerned with factory lighting. First, the Fifth Report of the Departmental Committee on " Lighting in Factories," and secondly, the Illuminating Engineers' Society's " Lighting Code."

The latter contains a schedule of standards of illumination for the various processes of the hosiery industry, and it is important to realise that, by the very nature of the work, operatives at some processes need more light than others.

When the degree of illumination has been chosen, and the lamp watts fixed, it is necessary to choose efficient reflectors, and mount them so that the relation between height and spacing ensures even illumination over the working plane. Proper mounting must also ensure that neither the operative, nor overhead pipes or other obstructions, cast shadows over the working area.

The type of lamp and reflector must be chosen so that there is no direct glare from the light source. The tungsten filament lamp with its high brightness is apt to offend in this respect, particularly where the reflector is of a poor design, but even where the reflector is well chosen, much discomfort may be caused by light from a bright source reflecting back off machinery, etc. This can be avoided by diffusing a bright light source, or by using tubular fluorescent lamps, which themselves have a very low surface brightness. In either case, the bright parts on machines should be kept to the minimum, and glossy topped tables, or glossy paints on walls and ceilings, should be avoided. Walls and ceilings are best painted with an " egg-shell " finish.

The choice of the type of lamp to be installed is most important, and considerable thought should be given to the rival claims of tungsten filament and tubular fluorescent lamps. The fluorescent lamp is gaining in popularity because of its low electricity consumption, long life, and low surface brightness. Furthermore, it tends to give a shadowless light distribution, due to its length, and emits a high quality light closely resembling north-sky light, which is particularly valuable where colour matching is necessary.

It is strongly recommended that every effort should be made to give surroundings approximately the same brightness as the work itself, as otherwise the eye has difficulty in focussing from one to the other. Walls should be painted in light attractive colours, while ceilings should be white, cream, or pale blue. When the artificial lighting is installed provision must be made for a little upward light, to prevent the dismal "tunnelling" effect so frequently seen. This can easily be done by using open-top reflectors, and the slight loss of light on the working plane is completely outweighed by the gain in overall cheerfulness.

Amongst these general recommendations it cannot be too strongly stressed that the attempt to improve an inferior system of lighting, by adding new lighting points in scattered places, is seldom successful. It leads to the far too generous use of local lighting fittings, with uneven and wasteful illumination.

The control of the lighting system is often very haphazard. Automatic control by means of a photo-electric cell, which switches on the artificial lighting whenever the natural daylight intensity falls below a pre-determined level, has much to commend it. Where there is no such automatic control, responsibility for switching on lights should not be left to the individual operatives, but vested in a responsible executive.

Finally, having installed a good lighting system, it must not be forgotten that regular maintenance is required. Dust and dirt on lamps or reflectors may absorb anything up to 50% of the light, and seriously affect the even spread of illumination. Then, too, all lamps deteriorate towards the end of their life and, although they will still burn, the efficiency falls off. It is recommended,

therefore, that group replacement be made at regular intervals, particularly where the visual task is exacting.

RECOMMENDATIONS FOR PARTICULAR PROCESSES. In the following recommendations the intensity of light required for various operations is quoted in the commonly accepted unit, a " Lumen per square foot", written L./sq. ft. The intensity of light can be measured by a direct reading instrument known as a " Light Meter ", which can easily be used on a factory bench or machine, if care is taken to place the meter in the actual working plane.

(*a*) *Winding.*

Standard of illumination required—15 L./sq. ft. (I.E.S. Code).

Lighting should be general, but lamp position should be related to the machine layout. A contrasting background beneath layers of threads will help in detecting broken threads.

(*b*) *Knitting.*

Standard of illumination required—

Light threads—15 L./sq. ft. (I.E.S. Code).

Dark threads—30 L./sq. ft. (I.E.S. Code).

Again lighting should be general, but careful siting of lamps in relation to machines is necessary, particularly with the larger types of circular knitting machines.

(*c*) *Linking.*

Standard of illumination required—50-75 L./sq. ft. (I.E.S. Code).

In order to secure the high intensity of illumination demanded by this exacting work, lamps must be mounted low down and close to the benches. They will probably be mounted too low to give sufficient general light as well, and it will, therefore, be necessary to install additional widely-spaced lamps, with distributive reflectors, high up near the ceiling.

(*d*) *Operation of Bench-type Sewing Machines.*

Standard of illumination required—

Light materials—20 L./sq. ft. (I.E.S. Code).

Dark materials—50 L./sq. ft. (I.E.S. Code).

The most exacting visual task in sewing is often re-threading needles, but this is made easier by using a piece of white paper to give a contrasting background. If this is not sufficient or not practicable, suitable local lighting must be installed, to be used for this operation only.

(*e*) *Countering.*

Standard of illumination required—

Light materials—20 L./sq.ft. (I.E.S. Code).

Dark materials—50 L./sq. ft. (I.E.S. Code).

A good general system of lighting is required for all the work covered by this heading, and it is here in particular that the high " day-light " quality of the fluorescent lamp shows its value.

(*f*) *Non-Production Areas.*

Stairs, corridors, stockrooms, toilet rooms, yards and boiler houses should not be forgotten, but the problems of each considered in their turn. Quick,

safe movement depends on good lighting in corridors, on stairs and in the yards.

POWER TRANSMISSION

INTRODUCTION: At present a large proportion of the power transmission is done by line shafts and belting, and power losses, due to bearing friction and belt slip, are considerable. The advantages to be gained by eliminating as many shafts and belts as possible are obvious. Greater efficiency, less obstruction, greater safety, and very much greater flexibility in machine layout, are all achieved.

GENERAL RECOMMENDATIONS: As a general rule, electricity should be used to transmit power as close up to the machine as is possible, so that there is a minimum of mechanical power transmission.

Carrying out this policy will create a heavy demand for electric motors of 1-3 H.P., and for fractional H.P. motors. There is great scope for co-operation between hosiery machine builders and electric motor manufacturers. The aim should be to enable the driving unit to become a compact and integral part of the machine, with the motor designed specially for the work to be performed; and it is clear that only close co-operation can achieve this. The large numbers of small motors required will make it possible to produce them very cheaply.

Large numbers of individual motors will call for large numbers of final wiring sub-circuits, but as far as possible the principle of group distribution should be adopted. The practice of making piecemeal additions to existing wiring systems, as extra load is installed, is strongly condemned as inefficient. The distribution system should be planned throughout, and provision made at the planning stage for future extensions.

Much benefit can be derived from power factor correction, and condensers should be fitted either to the motors themselves, or to serve a whole department. A group distribution system lends itself to the latter arrangement.

RECOMMENDATIONS FOR PARTICULAR PROCESSES

(*a*) *Winding*

The popular type of frame is the Bottle Winder having up to 25 spindles. It should be driven through a modern short centre vee rope from a motor on the floor, close to the frame end. Although each frame only absorbs about ½ H.P., a saving of 10% to 15% can be made by substituting this arrangement for overhead line shafts.

Where "Leesona" coners are used, they are usually individually driven on the well-known lines of the Universal Winding Co., Ltd. The efficiency of this type of motor drive and the transmission to each winding head leave little to be improved.

(*b*) *Knitting*

(i) Circular Knitting Machines

Every type and size of circular knitting machine should be driven by its own individual motor. For the smaller sizes, suitable clutches and gear boxes will need to be developed, but co-operation between knitting machine and motor manufacturers would solve these problems.

(ii) Fully fashioned Hosiery Machines

These machines, too, should each be driven by individual motors for most efficient operation. Three-phase, A.C., variable speed, commutator

motors, automatically controlled from the strap rod mechanism, with chain transmission to the machine shafts, provide highly efficient drives. The power consumption is directly proportional to the speed at which the machine is automatically regulated, and the response of the quick acting mechanism, producing the desired speed change, is instantaneous.

(*c*) *Linking*

The present system of group drive should be retained for these machines. The diversity of load, and the power requirements of groups of linkers are such that each compact group is, in effect, a single machine with only small internal transmission losses.

(*d*) *Bench Type Sewing Machines*

It is strongly recommended that all these machines be individually driven by means of small motors of about ¼ H.P., having circular belts and 3-cone pulleys, with clutches incorporated. The poor diversity of these machines makes group drive very inefficient.

(*e*) *Blowing, Raising and Finishing*

Power requirements of these machines are the heaviest in the industry, and the gain in efficiency, by changing from group to individual drive, is unmistakable.

PRIME MOVERS AND HEATING

INTRODUCTION : The efficient utilisation of the coal resources of Great Britain is now recognised as a pre-requisite of national prosperity. Every technical advance in this direction is not only of scientific interest; it is of prime importance to every section of the community. The scarcity of fuel and its rising cost should bring this fact home to everyone.

GENERAL RECOMMENDATIONS : The advantages of electricity for power transmission within the factory have already been stated, as also have the advantages of direct drive of individual machines by electric motors arranged as an integral part of each machine.

From what source shall the factory derive its supply of electric power ? Should it seek to generate electricity in its own private plant, or should it avail itself of the public supply service ?

Experience has shown that generation of electricity can only be carried out with the highest thermal efficiency and lowest costs in large plants. Thus, it is possible to use high pressures and temperatures, and the aggregation of many diverse demands enables such a plant to run at a steady economic load.

During the year 1943, selected generating stations supplying the Grid, although burning inferior coal, produced electricity at a ratio of 1.38 lbs. of coal per unit of electricity. Such a figure could not be approached in relatively small industrial generating plants, and it is greatly to the national advantage that generation should be carried out so economically from an indigenous low-grade fuel.

Less labour per unit output is required to operate large plant, so it is possible to employ highly skilled technicians, equipped with the best instruments, and still show a reduction in cost of operating labour.

Moreover, in large plants, it is possible to use improved methods for preventing chimney emissions, which, together with the lower coal consumption greatly reduce atmospheric pollution.

The pending reorganisation of the electricity industry should provide abundant, cheap and ubiquitous supplies, but should such supplies not be available in any locality, the merits of Diesel and other types of oil engine for private generation would deserve consideration.

Where there is a constant demand for heat for process work, a back pressure or pass-out turbine, or engine, of simple design and relatively small capacity, may be justified. Electricity then becomes a by-product of the production of heat. But, if the demand for steam is small, such an arrangement is too elaborate, and a simple boiler is better. Under these conditions there is scope for the electrode boiler, although for large capacities it does not compare, in either efficiency or cheapness with more orthodox installations.

Within the factory, whether energy is used in the form of steam or electricity, it is an advantage to meter the supply to each department separately, so that an accurate allocation of costs is possible and inefficiency can be pinned down. But no matter what the size or type of the installation, qualified technical supervision is essential to its efficient operation.

PRIME MOVERS: Where there is no steady demand for heat for process work, factories should purchase electricity from the public supply authorities.

There are many advantages in doing this, and that they are already widely recognised is shown by the fact that a large majority of hosiery factories obtain their power from the public supply system.

An electric motor so driven gives a steady speed, thereby ensuring a uniform quality of production. Accurate metering of the electricity consumption must, in any case, be carried out for the whole factory, and can easily be extended for sectional costing.

The fear of prolonged interruption of production, due to breakdown of the private generating machine, is entirely eliminated, and variations in demand by the manufacturer, due to expansion in production or alteration of production methods, are no longer limited by the private plant capacity, but can be met at once without difficulty.

It is also no small advantage, in an industry handling delicate fabrics, to have the dust and dirt associated with coal and ash handling confined to the central power station of the supply authority.

In factories with dyeing and finishing departments, there is a continual demand for heat for process work, and steam must be raised for this purpose. An improvement in thermal efficiency results if the steam required for processing is first passed through a back pressure turbine, or engine, generating electricity as a by-product. But it must be emphasised that, in such a plant, electricity is generated merely as a by-product of the main operation, which is the production of steam. No more steam must be raised than is necessary for the processes in hand, and if the amount of electricity resulting by way of by-product is not adequate to the needs of the factory, it must be supplemented from the public electricity supply at an appropriate price. Unless this condition is observed, the thermal efficiency falls to a low level, and private electricity generation cannot be justified. In the interest of public and private economy, any excess of the by-product should be sold to the public supplier, at a price not exceeding his own fuel cost.

From considerations of coal conservation only, this policy can be justified in all cases, due to the higher thermal efficiency. But it is probable that individual combined plants are only economic in large factories.

Taking the long view, it is certainly desirable, and it might be possible, to plan factories (hosiery and others) having a constant demand for heat, in a group around, and adjacent to, a central heat station. The diversity of demand of such a group would produce a steady load during working hours, and it would be possible to run a large heat and electricity unit under economic conditions. This would confer upon the smallest factory the benefits associated with large plants.

SPACE HEATING: Most work in the hosiery industry is sedentary, and a room temperature of about 65°F. is required. The heating plant must, of necessity, be designed to maintain this temperature on the coldest day, when the outside temperature is perhaps only 25°F. Throughout the year, the average day temperature is about 52°F., so that the average load on the heating plant is only 30% of its capacity.

Where a back pressure turbine, or engine, is already justified by the demand for process steam, it may be economic to take steam for space heating from the same source. District heating from a central heat and electricity station, on a sufficiently large scale, may also be economic, even where there is no demand for process heat.

But, as a rule, it will be found best to install an independent heating system of simple and robust design. Arrangements of overhead pipe coils or " unit type " heaters give reliable and flexible service. Cast iron sectional boilers with automatic stokers should be used, and for the heating medium, low pressure hot water is satisfactory, and lends itself to automatic control by thermostat. Vacuum steam heating shows certain advantages for the larger factory, but for the small factory, water is more satisfactory on grounds of economy and simplicity.

Space heating should not begin and end with the installation of a suitable heating system, because, unless the factory building is adequately insulated, there will be a great deal of unnecessary loss of heat. This is particularly noticeable in single-storey buildings, or where high room temperature must be maintained for the manufacturing process. The greater cost of a properly insulated building is usually saved in the reduced cost of the heating plant, and in the annual saving in cost of fuel.

Even the best heating system and most carefully insulated building are liable to deteriorate, and regular inspection and maintenance are required to keep installations at their initial efficiency.

In rooms where there are fully fashioned stocking machines, using special yarns, the air condition must be kept within certain specified limits of temperature and humidity. Space heating under these conditions has received considerable attention, and most installations have already attained a high degree of efficiency.

PROCESS HEATING

(*a*) *Wet processes—dyeing, bleaching, etc.*

Injected steam is commonly used as the heating medium for the liquor in vats, although in America the use of high pressure hot water is receiving considerable attention.

If steam is first used to generate by-product electricity, designers of the dyeing plant and of the turbines must co-operate to secure the most economic pressure for the exhaust steam.

The heat consumption of vats should be kept to a minimum, and, for this purpose, totally enclosed vats are recommended. There is then the additional advantage that evaporation into the dye house is restricted, and the atmosphere is kept clearer. Thermostatic control has the advantage of checking waste of heat.

It is strongly urged that more thought be given to the problem of recovering heat from waste dye liquors. A simple contra-flow heat exchanger, of plate or tubular design in stainless steel, enables the waste dye liquor to be cooled to about 90°F., while heating the incoming clean water up to about 140°F. With the large quantities of liquor used in dyeworks, the saving would be appreciable.

(*b*) *Dry Processes*

The steam temperatures and pressures required for drying plants should also be remembered when designing the back pressure turbines. Drying plants should be designed for much lower temperatures, say 90-100°F., than at present.

Automatic temperature and humidity control should always be applied, and it is important to circulate sufficient air at a high velocity, along a well defined path, round the goods under treatment.

In America, infra-red lamps have been used successfully for textile drying, and the possibilities of this new development should be explored in this country, too.

Small amounts of steam pressing are frequently carried out in factories where there is no other demand for process steam. In these cases, it is most economical to install a small gas or electrode boiler, with automatic temperature control, and to use it for pressing only.

25th March, 1946.

APPENDIX D

Fuel Economy in the Hosiery Industry

The hosiery industry and the dyeing and finishing industry have made considerable strides during the war in the conservation of fuel, and have set an example which could with profit be followed by many other industries. A voluntary fuel rationing and fuel efficiency scheme covering 181 manufacturing units and 37 hosiery dyers and finishers in the Midlands was put into operation in May, 1942, with the assistance of the Ministry of Fuel and Power. A technical advisory service was set up in September, 1942, the cost of this being met by a voluntary levy on the tonnage of coal allocated. The level of hosiery production was fairly constant during the working of the scheme, and the table below shows the degree of saving in the use of coal which resulted from the various measures of plant re-organisation, and the regulation of dyeing shades and machine loads which were brought about.

TABLE SHOWING THE EFFECT OF FUEL CONSERVATION MEASURES ON COAL CONSUMPTION

YEAR	PERCENTAGE OF SLACK COAL USED	TOTAL COAL CONSUMPTION (PERCENTAGE OF 1941 USAGE)
1941	16%	100%
May 1942 to April 1943	17%	72%
May 1943 to April 1944	35%*	62%
May 1944 to April 1945	36%*	61.5%

*Mostly opencast slacks.

These results have been helped considerably by plant re-organisation and, since August, 1943, many licences for additions to, and improvements in, plant have been issued by the Ministry of Works, the Ministry of Fuel and Power and the Board of Trade, amounting in value to more than £14,000, while further schemes are under consideration, or are being prepared, to a value of nearly £9,000.

The hosiery industry has made intensive efforts to economise in fuel, and it is hoped that this will continue, not only because of fuel supply difficulties in the short term, but also as a method of cost reduction in the long term. Other industries might obtain some benefit from a study of the achievements of the hosiery industry in fuel economy.

APPENDIX E

Report to the Main Hosiery Working Party of the Delegation appointed to examine Conditions of Production, Organization and Distribution in North America

INTRODUCTION

The Delegation, comprised of the signatories to this report, arrived in the U.S.A. on Sunday 10th February and after spending the 1st and 2nd March in Canada sailed from New York for England on Monday morning 4th March. The length of the visit was determined by the dates of arrival in and departure from New York of the R.M.S. *Queen Mary*, and had alternative ship travel been available your Delegation had intended to spend a little more time in the U.S.A., and a good deal more time in Canada.

Annexed hereto is a list of the plants visited, trade associations, etc., whose representatives we interviewed, the manufacturers with whom our problems were discussed but whose plants were not visited, Government and trade union officials and representatives of machinery suppliers and others who also assisted in the enquiries. In the time available your Delegation endeavoured to cover as wide a field as possible, to examine matters as deeply as practicable, and throughout to ensure that their review was as representative as possible. To this end requests were made to the three trade associations concerned, viz. :

National Association of Hosiery Manufacturers

Underwear Institute

National Knitted Outerwear Association

to indicate plants that might be regarded as forming a representative cross section of these organisations. This they did and plants were visited in the U.S.A., as far afield as High Point, North Carolina ; Reading, Pennsylvania ; Milwaukee, Wisconsin and Grand Rapids, Michigan.

Your Delegation are of the opinion that, while the plants visited were representative, a much more exhaustive examination requiring a good deal more time would most probably reveal matters not dealt with herein and probably place greater emphasis on certain aspects touched upon but lightly. This aspect cannot be stressed too strongly and should be borne in mind when reading and considering what follows, which of necessity deals with the experience at a few mills, and the observations made must be related thereto and not regarded as necessarily indicating the conditions prevailing throughout the U.S.A. and Canada, although, from discussions with authoritative persons in each section of the industry, we were satisfied that such experience was general. None the less, your Delegation consider that their visit to North America has been well worth while and has provided the members with knowledge of

general conditions and organisation, important in their task as members of the main Working Party, which would not have been available to or acquired by them by any other means.

Having in mind the terms of reference of the main Working Party, your Delegation regarded its terms of reference as to examine, compare and report upon the methods of production, organisation and distribution of the hosiery and knitwear industry in North America and to review the possibilities of increasing exports from Great Britain thereto. This last-mentioned subject was of necessity approached with some delicacy, as we were informed that there was at this time a certain amount of lobbying at Washington in regard to the limitation of imports and tariffs thereon. However, your Delegation feel able, by reason of the representative nature of the sources from which information was obtained in this connection, to deal with this important matter herein.

It should be noted that the hosiery industry as it is known in Great Britain is regarded in North America as three separate industries, viz. :

Hosiery—Socks and Stockings of all types—Men's, Women's, Children's and Infants' both Fully Fashioned and Seamless.

Underwear.

Outerwear.

The report which follows has for convenience been sub-divided under the following headings—

A. Hosiery
   (*a*) Women's Fully Fashioned Stockings
   (*b*) Women's Seamless Stockings
   (*c*) Men's Half Hose and Children's Socks
B. Underwear
C. Outerwear
D. Distribution
E. Training and Welfare
F. Research
G. Statistics
H. Costings
I. Exports to North America
J. Lighting, Heating and Power Transmission
K. Concluding Observations
L. Acknowledgments

A. HOSIERY

(*a*) *Women's Fully Fashioned Stockings*

LAYOUT OF FACTORIES

With but few exceptions the type and structure of factory buildings conforms generally to those of Great Britain, being mostly of the multi-storey type. The size of rooms within the building was, however, generally of greater area than those in the majority of British factories. We were struck by the number of old three to six-storey buildings in use compared with those of single-storey structure, and although opinions were expressed that the modern single-storey factory might have advantages over the multi-storey type of building, it

was conceded to us on pressure of enquiry that, provided the multi-storey building was adapted in the first place for the production of fully fashioned stockings, it was possible, by the use of modern conveyor and general communication devices from floor to floor, so to equip such a building as to be an advantage even against the larger area floor space that would be required for the same production in the single-storey building.

The development of the single-storey factory is largely to be found in the Southern States, where the production of fully fashioned stockings is of comparatively recent installation, largely brought about by the migration of part of the industry from the North. Most of these factories were designed to house the more modern type of machine, whereas the older factories of the North were built during the period when the fully fashioned machine bore no comparison in size to the latest developed types in operation to-day.

It is noticeable that the development of the modern machine has created problems in the American industry similar to those experienced in this country in relation to factories. Many existing factories in America have been compelled to resort to a variety of forms of expediency in adapting the larger machines in buildings originally erected to accommodate the older and smaller type.

CONCLUSION 1: It is our considered opinion that, comparatively speaking, buildings generally in the U.S.A. are no better adapted for the production of fully fashioned stockings than those in Great Britain.

LOCATION OF FACTORIES

The fully fashioned knitting industry prior to 1936 was primarily situated in Pennsylvania with Philadelphia as a most important producing centre. From 1936, a period of continual industrial strife between manufacturers and the trade unions, a migration started from this city, mainly to North and South Carolina. It would appear from enquiry and observation that while unionisation might have been a factor in determining migration, much might be said of the attraction of cheaper labour in the South as an equally contributing factor.

CONCLUSION 2: What appears to us to be of importance in the spreading of the industry in the U.S.A. over such a wide area, is the fact that there appears to be no serious handicap in the distribution of production in areas so far away from New York, the accepted centre of gravity of sales organisation.

CONCLUSION 3: It was further demonstrated from all the available information received that only a relatively small proportion of key personnel was needed to train and establish the industry in the new areas. It was freely admitted that, prior to this migration, the industry as a whole had largely accepted the view that 4 years' training was necessary to produce a fine gauge knitter, but experience in the South had proved conclusively that competent knitters could be trained in from 6 to 12 months according to the adaptability of the individual.

AIR CONDITIONING AND HUMIDIFYING PLANT

In no instance did we find any special attention paid to air conditioning and humidifying in any of the knitting plants we visited in this section. On enquiry in this matter we were assured that, while some few firms had installed air conditioning, and in a few cases humidifying plants, it was not generally considered necessary by the trade. On the contrary we found mills where no

special effort was made even in the regulation of temperatures, and from our point of view most of the mills we investigated were excessively overheated. We did, however, find in one plant experiments being conducted with a dehumidifying plant as an aid in the knitting of nylon.

CONCLUSION 4: It is our considered opinion that America shows no advancement in factory air conditioning as compared with that prevailing generally in Great Britain, indeed of the factories we visited we saw nothing in this direction that compared, for example, with the air conditioning plant in operation in one of the latest equipped factories in Great Britain.

TYPES OF MACHINERY—KNITTING MACHINES

With regard to knitting machines there is no doubt that America generally has a great advantage over Great Britain. From 1936 to 1942 great strides were made in replacement of older types of frames by the more modern type of machines. The development tendency is almost exclusively towards finer gauges, mainly 51 gauge of the 30 section type. While from 1942 to the end of the war machine production ceased, it is of particular importance to note the development taking place to-day as shown by the construction programme of the Textile Machine Company of Wyomissing, Pennsylvania. Even though this company is at the moment experiencing some difficulty in finding a sufficiency of skilled workers, they are, nevertheless, making rapid strides in bringing machine production to a full completion of programme output. It is estimated that their output of 30 section 51 gauge machines will rise from 10 in the month of March, 1946, to between 60 and 80 by September of this year, and will certainly reach the 100 mark as a monthly output by 1947. It would appear conclusive that the American fully fashioned stocking industry has satisfied itself that, for some time to come, 51 gauge will constitute the bulk of production.

In almost every mill we found a process of conversion of old 42 and 45 gauge machines into 51 gauge. Much too has been done in the extension of old 18 and 20 section machines into 30 sections, in almost all cases accompanied by a change of gauge to 51. This policy was advocated strongly by the Post War Policy Committee of the National Association of Hosiery Manufacturers in 1944, and has been accepted as the only expedient in meeting the demands of the immediate future for fine gauge hosiery during the period of machine construction rehabilitation from its war-time commitments. It is estimated by the hosiery industry in America that machine production will not reach the normal requirements of the American consumer demand for hosiery for at least three years, even though the whole of such machine production is ear-marked for the home trade.

CONCLUSION 5: America has already a tremendous start on Great Britain in the production of fully fashioned knitting machinery. There is also a far greater appreciation of the needs of the future in relation to production of fully fashioned stockings, as shown by the virility with which manufacturers have tackled the adaptation of old machinery to future requirements.

CONCLUSION 6: We are assured from all the evidence we have taken that, unless speedy action is taken in Great Britain to develop production of fully fashioned machinery, the prospect of our taking a place in world markets for this type of production will be delayed for at least 10 years, and it might well be at such a time too late to attempt to capture such markets.

CONCLUSION 7: Apart from the experimental machine in operation in Berkshire Mills, operated by electronic control, there is nothing unusual in either type or general construction of the new machines now in production in America. The machine in general is a counterpart of the modern pre-war German-built fully automatic welt turning machine now in operation in certain firms in Great Britain.

CONCLUSION 8: Given a fair opportunity and some degree of encouragement we see no reason why British machines should not hold their own against those now being built in America. It is our considered opinion that this problem of machine building is of such paramount importance at this stage to the future of British production in the fully fashioned field that the main Working Party might well conduct an immediate enquiry—

(*a*) into the requirements of the fully fashioned manufacturing industry;

(*b*) into the possible machine output of British producers, in order that steps might be taken, with the fullest support of the State, to ensure that the programme of output of machines is brought, at the earliest possible moment, up to the requirements of the manufacturing section of the industry.

ANCILLARY MACHINES—LINKING AND SEAMING

We found nothing different in the case of either linking or seaming machinery from that used in Great Britain. In the vast majority of cases the former were entirely of the latest Sotco model; the only variation in this operation we found was that in some cases the linker operated from right to left as against the British custom of left to right. We were satisfied that no advantage in production accrued from this variation, indeed wherever we questioned the point doubts were expressed as to whether after all the British method was not the better one. Practically the whole of the seaming machines were of the Union Special and Singer types, conforming in performance to much the same as those in Great Britain.

Of particular interest was the unanimous verdict prevailing among managements in all the firms we visited that as an operation, from a purely operative point of view, fully fashioned seaming was regarded as a far more skilled job than that of fully fashioned linking. This verdict was the result of extensive tests taken for many years in the training of new entrants to each type of operation, and it was generally held to be far easier to find the type of girl to master efficiently in a far shorter space of time the operation of linking than that of seaming. This difference we observed was acted upon by managements in relation to the value of the two jobs, since proportionately the wages paid to seamers were generally higher than those of the linkers.

EXAMINING MACHINERY

It was obvious to us that in most plants the utmost care was taken in the inspection of goods in each of the various processes of production. The types of machines used in the initial inspection from the time the goods were linked and seamed, varied only in type and construction and not in general effect. Mostly they were the advanced types of expanding machines, some fitted with mirrors, the very latest type with counting devices also, all of which gave the operative a full and easy field of vision over the whole stocking, enabling the operative with great dexterity immediately to find any flaw or damage in the stocking at

this stage. We were left in no doubt that in this field of examination great strides had and were being made. Similar types of machine are in use in Great Britain in some units of production, but we have no knowledge that the latest type that we saw in America is in use in this country. We got the impression that, even now, most American mills were still not satisfied that they had found a complete answer to efficiency in this important operation, and much may be heard in the future of still further developments in this most important field.

NUMBER OF MACHINES PER OPERATIVE

From personal observation we might have been in some doubt as to what was the general practice in America in relation to machine control from an operative point of view, since we saw men operating one machine, men operating 2 machines with helpers, and in one case a man operating two machines without help at all. We were subsequently to learn, however, that all the mills where we saw men working 2 machines, with or without help, were non-union establishments. Consultation with the Union on this point left us in no doubt that, in agreements existing between organised labour and employers, the standard practice is accepted of one operator working one machine regardless of gauge or number of divisions.

In one large mill the help afforded to the knitter working 2 machines was in some cases female labour, while also in the same mill we saw 3 girls operating machines on their own account. We were informed by the management of this firm that their female labour on machines was purely war-time expediency, and while they were committed to take back the whole of their male personnel on return from war service who formerly occupied these positions, they expressed themselves as more than satisfied with the performance of the girls in these occupations.

CONCLUSION 9: Despite the difficulties attendant upon forming conclusions in this matter we feel we must express our candid opinion that it would be unwise to accept any other view than that the accepted practice in America is that of one operative to one machine.

OLD MACHINES—LEGGERS AND FOOTERS

We feel it might be noted here that there are still in American production a considerable number of old frames of the legger and footer type. We saw quite a number standing idle, largely because of shortage of raw material and labour. There is no doubt, however, that once labour and raw material become available in sufficient quantities these machines will be brought back into operation, but only so long as they fill a need against consumption requirements pending the installation of more modern types.

MAINTENANCE OF EFFICIENCY AND OUTPUT

The common practice appears to be the operation of a two-shift system (5-day week) on knitting machines, the first shift starting at 6 a.m. and changing over at 2 p.m., while the second shift continues until 10 p.m.

We particularly observed supervision of plants from a mechanical standpoint, and were interested to find that, generally speaking, it was not so plentiful as compared with most shops in Great Britain. It was not uncommon to find one mechanic to a room of 30 or 40 machines. To find the answer to plants of

machinery obviously running so well with apparently such sparse mechanical attention we first looked for the reason at the machines themselves. In the first place we were struck by the obviously high standard of operative skill as shown by performance in all the mills we visited. We learned that in training of operatives a far more selective method was adopted than that generally observed in Great Britain; this, however, was but part answer to our question. We then observed how carefully each mill endeavoured to maintain machinery in producing one class of work over long periods, thus reducing dislocation of machines, through changes, to an absolute minimum. We were informed that it was not an uncommon practice for the bulk of machinery to run for at least 6 months without a change of style.

It then came to our knowledge by enquiry that, with the exception of the purely knitting mechanism of the machines, it was the practice in the large mills to employ cleaners to clean the machines outside knitting hours, thus ensuring full knitting production for the maximum number of hours of the knitters' employment within the factory. It was generally observed too that greater attention was paid in most mills to space between machines, thus affording operatives more room in which to work than is customary in Great Britain. In one mill where we commented upon the space afforded between machines, we were told they were considering putting the machines closer together in order to enable the two knitters in each alley the more readily to assist one another. This practice of mutual assistance in the alley on knitting machines we found to be the common practice and not the exception.

In all plants, union and non-union, the remuneration of the knitter was based on payment by result, although we found anything but a common formula of payment tor the same type of stocking on the same type of machines in the mills we visited. Here again such differences as we observed were due to our visits to non-union shops, since in all union establishments there is applied an agreement covering the industry on a standard basis.

In all mills we found the standard and method of inspection such as to narrow the time limit between the knitting and finishing of the stocking to an absolute minimum. Apart from the inspection machines already referred to, special inspection apparatus was used by trained girls to keep a constant check on quality by course counting. It was claimed in most mills that each division of each machine was checked for quality in this manner at least twice per week. It was patent to us that such careful scrutiny was far from wasteful; it enabled production to go forward with complete confidence in the minds of all producers that any defect in construction of the stocking would be found before any great quantity had been produced. Again, in most mills, each knitter makes by fashioning marks his own identification in every stocking he makes, so that at any time, either during production or after the goods had left the mill in a finished state, any returns could be identified back to the machine and the knitter who had produced them.

In some respects the time and effort spent in testing goods for faults, quality, stretch, volume and general wearability seemed to have gone to the limits of absurdity until one traced back the cumulative effects of this examination to where it mattered most—the knitter. It was then we appreciated to the full the reasons why the standard of the knitters themselves was so good, and why mechanical supervision had been reduced to such economical limits.

CONCLUSION 10: Finalising our observations on this aspect of "Production Efficiency", we were satisfied that, generally speaking, American manufacturers have profited by the care and attention they have given to their production, and in particular to the manner in which they have trained their operatives and the high standard of efficiency expected of all concerned.

In only one mill did we find what to us appeared to be anything new in experimentation of control of production. Here experiments had been made in co-ordinating the production from each machine to its own unit of linking and seaming, thus forming a producing team as between the three operatives needed to complete the stocking. It was claimed for the experiment that to date it had justified itself by obviating complaints of linkers of variation in stitch formation for linking, but more important was that any fault found in construction by the two finishing operatives was brought to the notice of the knitter within a very short space of time. There was an admitted flaw in this method, mainly that knitting production on a machine did not match that of linking and seaming, thereby necessitating production from spare knitting machines being utilised as a fill-up of production on these two later operations.

We were not convinced that any gain, either in efficiency or production, resulted from this experiment.

FINISHING OPERATIONS

In most of the mills we visited dyeing and finishing was part of the unit of production within the mill.

From our observations it was evident in most instances in this section of the industry, that dyeing and finishing plants were of first class standard, in keeping with the generally high degree of efficiency which marked production methods as a whole. We have not attempted to analyse this section of the industry since we are satisfied that the report covering this section as submitted by the delegation from the British Silk Stockings Corporation that visited the U.S.A. in 1945, furnishes a far more detailed account than we could possibly give to it following the limited scope of our investigation in this field.

COUNTERING OF GOODS

It was from the time the goods left the trimming section and entered the warehouse department that we again saw a great difference in the handling of production from that employed in Great Britain. While methods varied from mill to mill, generally speaking, as against the British approach to this operation, there was a breakdown of the operation into at least two distinct sections. In all firms pairing was an operation in itself; the pairing operation depended upon the type of examination conducted before the goods came to be paired. In some mills there was an inspection before pairing, in which case the pairer concentrated on the one job. In most cases, however, the pairer conducted an examination of the stocking and graded the goods into firsts, seconds, thirds and throw-outs.

We found some difficulty in determining by what method mills conformed to the practice of providing a varying length size to each foot size. In some instances, such variations were made on the machine according to size and length specification, but we were satisfied that out of each of these groups the pairer eliminated from each group any length of stocking that did not come within the half-inch or one inch tolerance allowed in length for each length size, which was then put on one side and incorporated in its own size bracket. In

other words, we were satisfied that America had not solved the question of maintaining uniformity of length in the finished garment, but that the requirements of the public were to some extent met by the appropriate description of the goods as to leg length and foot size when boxed for sale.

We found the universal adoption of " transferring " done by semi-automatic (Kaumagraph) vertical handled transfer machine operated by the foot, the transfers being hand fed from a roll as against the British method of flat iron and single transfer. There is no question in our minds that a great economy of time and effort resulted from this one improved operation.

In some instances the goods were passed to a folder and from the folder to the boxer who inserted whatever rider tickets were to be used. In other instances the whole process of inserting rider tabs and boxing was done as one operation. Quite a considerable proportion of American production is packed in cellophane bags, and here again the folder or boxer, as the case may be, completed all operations.

A feature of this department were the tables at which the girls worked. In most mills the pairers and folders were working at beautifully constructed white opaque glass-topped tables which gave an ease of movement to the operative far beyond anything we have seen in the warehouse of a British manufacturer. Small in detail, but none the less effective, was the tilt of these tables in some mills, thus ensuring complete comfort to the operative by reducing to a minimum the bending required to lay out and scrutinise the stockings.

CONCLUSION 11 : In this department of production we found it extremely difficult to arrive at a conclusion as to whether the American method was more advantageous than that generally adopted in the Midlands of Great Britain. It should be made quite clear that to a large extent this same American method is in operation in fully fashioned mills in the South of England and in certain parts of the Midlands, although not carried, perhaps, to the detailed extent of the U.S.A.

In our opinion there are two approaches to this problem in arriving at a conclusion :

(*a*) The cost of each method in labour.

(*b*) The floor space required by each method.

With regard to (*a*) we find it extremely difficult to arrive at a decisive answer since the productive methods themselves varied so considerably, and cost of necessity varied according to the amount of inspection and work put into the goods in the various mills. We formed the general conclusion, however, that as far as cost is concerned the American method might, in total, be less than that where men are employed in Great Britain to do the whole operation, but we would not use this as any argument to give preference to their method as against our own. What did impress us about this method was that in the inspection the goods underwent a greater scrutiny than we believe is general in the final stages in Great Britain.

As to (*b*) there was no doubt in our minds that a far greater floor space was required by the American method, to deal with the same quantity of goods by their method as against our own.

PRODUCTION : KNITTING

Per machine : Since we found no evidence in America of either desire or intention of instituting three-shift working, and bearing in mind that up to 1939

it was the almost universal practice in the British fully fashioned stocking industry to operate on a 24-hour production basis, then it is obvious that British production per machine was far higher than that of America. In measuring the output per worker we examined very closely indeed the production of various types of machines from the speed performance of the machine to the operative performance, and we are satisfied that as a general average, taking machine for machine, style of stocking for style, the productive capacity per operative in the fully fashioned section in America is no better than that of the performance of the British knitter. It must not be assumed, despite the efficiency of the industry in America, that they have created either super machines or super knitters. We believe we have given full credit for their advancement in the field of machinery, but we are convinced from all that we have seen and all that we have learned from contacts that, given the same facilities, the average experienced British knitter would produce equally with his American counterpart. We would suggest, however, that the general standard, as judged by what we saw in America, is perhaps of a generally higher level than that in British industry to-day; at the same time we found the same human differences reflecting themselves in the production of knitters working the same type of machine, the same type of stocking, in America as we find in our factories in Great Britain.

MATERIAL

It was difficult to measure the production in relation to material since the bulk of production in America to-day is transferring over to nylon, concerning which we have little evidence in this country for comparison.

The subject of nylon and the matters attendant upon the use of this yarn (knitting and pre-boarding) have been reviewed in great detail in the report of the British Silk Stockings Corporation, to which your Delegation draw particular attention.

During the visit of your Delegation to Canada, they saw nothing to which further reference need be made.

(*b*) *Women's Seamless Stockings*

A few small plants were seen and certain observations in connection therewith appear under the following heading. This section of the hosiery industry was reviewed at some length by the delegation sent to America by the British Silk Stockings Corporation, and while accepting the conclusions contained in their report the small plants seen by your Delegation in no way reflected the standard of efficiency portrayed therein.

(*c*) *Men's Half Hose and Children's Socks*

Plants visited included the two largest plants in the U.S.A. specialising in men's half hose, but we found no case of specialisation in women's seamless stockings, and we visited only one plant making children's socks and this plant was concerned solely with this production.

All the plants visited were in multi-storey buildings, several with elevators of old type, and showed no improvement on the general type of building in use in Great Britain, with the exception that the majority seen had somewhat greater height to the ceilings.

With the exception of the large plants specialising in one product, it was not unusual to find mixed plants making men's and women's seamless hosiery in the same mill, and in some cases gloves, outerwear and underwear as well. Particularly was this the case in the Canadian mills.

The Canadian manufacturers attributed the need for a more mixed production to the very much smaller population of Canada compared with the U.S.A., and the consequent smaller demand for any one type of goods.

Certain features were common to all the mills we visited in connection with general factory conditions and layout. They are avoidance of glare by excluding direct sun light, and the temperature inside the mills, which seemed to us uncomfortably high. In a number of mills a good deal of attention was paid to colour, and the state of decoration in such plants was good. They were usually treated in glossy white or grey paint for walls and ceilings alike, and in one case floors were treated in a similar manner. The use of humidifiers and air conditioning plant was not evident, but we were informed that the introduction of air conditioning was contemplated by some of the manufacturers. There was, however, a considerable contrast in conditions and layout between the most efficient and the least efficient, and it is difficult to generalise, but it would be fair to say that on the whole a good deal of attention was given to providing a maximum amount of space between machines and operators. Somewhat congested conditions, however, were seen in two of the plants visited.

There was an absence of conveyors and the movement of goods from one department to another was effected by means of wagons and lifts.

Generally speaking, the yarn is supplied to the knitter.

TYPES OF MACHINERY

The women's stocking machines seen were all Model K and old machines ranging from the coarsest to 340 needle. In the case of one firm their machines were being converted to 340 needle, but in the Canadian mills we visited the finest gauge was 260 needles. There is a tendency in the U.S.A. to convert machines to finer gauges, but at present a fair proportion of coarse gauge machines are in use.

The men's half-hose plants contained a large proportion of run-on-top machines of Banner (Maxim) type with mainly wrap stripe models and very little reverse plating. Quite a lot of old " Banners " are still in use for plain goods. The proportion of double cylinder machines varies in different mills ; the highest percentage was seen in Canada. On the whole, the age and type of machinery in use is behind the average British plant, and some ingenuity in keeping old machines running has been exercised by using attachments for inserting lastex yarns to make false ribs for ankle length half hose. This was adopted in most mills, and the short sock may therefore have had some influence on the retention of older machines. The machines in use were mainly Banners plain, reverse plate and wrap, H.H. plain and wrap and spiral, Autoswifts, Komets and coarse gauge Links Links. These latter were mainly for short sock production. Generally speaking, however, many of the machines were of a type unsuitable for production of goods saleable on the British market. Very few Wildt model E. machines were installed, but the manufacturers showed considerable interest in these machines, and in one case had 40 on order. A fair-sized battery was, however, working in one plant in Canada.

All the children's sock machines seen were run-on type, mainly Banner

machines using ribs made on Fidelity machines. No great enthusiasm was shown here for double cylinder machines. In the case of plain coloured socks these also were made on Banner machines, and in this case the tops were stitched on and were for a low class trade.

In all cases visited the number of machines per operator was higher than in Great Britain.

In the case of Model K's it was usual for 30 machines to be supervised per man or 24 per woman, and for run-on-top machines for half hose and socks the number varied from 3 to 5 machines per woman.

As against this there should be noted the difference in the functional operations compared with Great Britain. In addition to mechanics who deal with mechanical defects and breakdowns there are also employed " fixers " who *inter alia* do all alterations to the machines necessary on account of size, quality of fabric, pattern changing and replacement of all needle breakages. They are usually ex-knitters who have shown adaptability and have been graded up. There is one fixer to 30 Model K machines and one to 20 wrap stripe fancy half hose machines.

The knitters are not permitted in any way to adjust machines, but are solely responsible for machine minding and collecting the goods as produced.

The linking plants seem to have received special attention, and the majority of the machines used are steady dial, and a great preference is shown for Sotco machines. It was in this section of the industry in particular that we observed that the linkers were " running on " in a reverse direction from that adopted in Great Britain. Individual lighting to these linking machines at low level (just above the operator's head) is the rule rather than the exception, although there were cases of fluorescent lighting placed higher for general diffusion.

An ingenious clipper vacuum machine was in use everywhere for clipping and removing loose ends from inside all fancy socks.

After leaving the machine it is usual for the goods to be examined on boards and turned with great facility in the same operation. Only the faulty goods thereby reach the menders. Any faulty goods noticed during trimming are extracted for return to the menders.

Dyeing and finishing was undertaken by all the hosiery manufacturers visited, and the goods were finished on aluminium steam-heated shapes and a high output obtained, both men and women being employed on this occupation.

In all cases it was found that pairing and folding were treated as separate operations. The dress mending, as known in Great Britain, is omitted, and any faulty goods are graded out by the pairers and where necessary handed to menders for repair. This appears to effect an economy of both effort and cost.

At one plant we saw folding, rider tabbing and boxing off by a team of girls working at a conveyor belt. Where used with flow production certain benefits are obtained by the use of this system.

After pairing, the goods are "transferred", usually one sock of each pair is transferred; a roll transfer is used and irons with vertical handles. This is a much speedier method than used in Great Britain, and it is said to be common for an operative to transfer in this way 900 dozens per day even when a number of changes take place.

The folder in some cases also affixes tickets and then boxes the goods.

It is usual to run machines a minimum of three months on any particular design and ranges of an extensive nature are offered each six months. In one outstanding case it was stated that 1,200 different designs were included in each of the pre-war ranges, but at present this is reduced to 600 designs. This concern distributes to 10,000 retail customers.

There appears to be no minimum size of order; another firm pre-war adopted a 60 dozen minimum but does not propose to reinstate this condition of sale in the post-war years. It should be noted, however, that only very large orders can qualify for " confining ", and all other orders are executed from the range of goods coming through the mill in the normal flow.

The goods are normally despatched in cardboard cartons and not in hampers.

It should be noted that, during the war period, the production of men's half hose of wool construction has increased very considerably for war purposes, and stepped up from 4.3% in 1940 to 36.5% in the second half of 1944, and there is a feeling that as so many men have now become familiar with the use of wool socks through service issues, this will have created a consumer demand for this type of merchandise which will continue to some extent in the post-war years.

CONCLUSION 12: The layout of factories is little different from the British factories but the manning of machines with more fixers and less knitters appears to effect some saving in man-power.

The machines in use were in many cases obsolete according to British standards, and there is not the same enthusiasm for installing expensive double-cylinder machines as is found amongst British manufacturers. The linking plants are an exception and the preponderance is for steady dial type (Sotco) machines.

To summarise—your Delegation are strongly of the opinion that as regards the production of men's half hose and children's socks the manufacturers of Great Britain have little to learn from manufacturers in North America.

As will be observed later under the heading of " Export" your Delegation are of the opinion that there is a wide market for men's all wool half hose to North America, and having in mind our earlier observations contained in this section of our report we would advise most strongly that every priority should be given to the re-equipment of British manufacturers before any large number of the appropriate types of machines are exported from Great Britain.

B. UNDERWEAR

Generally the industry consists of small units, 80% of the total output being produced by mills employing less than 500 workpeople; the small mills, therefore, are the most important in North American distribution. Underwear factories have been mostly started by individuals in very small premises.

LAYOUT OF FACTORIES

All the factories visited were of three to six storeys. Opinions were expressed that single-storey factories were likely to be built in the future. With one exception they were of sound construction with high rooms, and kept in excellent repair, but are certainly no better than, nor even as good as, many we have in Great Britain. There are no restrictions regarding repairs, renewals or decorating.

The layout and organisation of the various departments could be improved, in some cases work passing unnecessarily to and fro, but it is only fair to mention that a great deal of reconversion is taking place.

The lifts are of an old type and very slow. The factories appeared to us to be overheated, but the operatives are accustomed to it. Many firms are taking up various colour schemes for walls and ceilings, but white predominates. With one exception the factories we saw were kept very clean, high pressure air being used for cleaning machines, shafting, walls and floors. Humidifying plant is used very little, and where used the installation is of the individual Bahnson type. No air-conditioning plant was found in the underwear factories.

Conveyors : Only very small conveyors were installed and these were used to take parcels from folders. We were surprised to find that chutes were not in use anywhere, all goods having to be moved from one floor to another by lifts.

Power and Heating : In most cases electric power was derived from outside sources. One manufacturer still obtained his power from a water wheel. Another had a most up-to-date oil installation. This power house was painted white and was spotlessly clean.

Winding Machinery : Universal Leesona cone winding machines seemed fairly general. In one factory one girl had charge of 50 spindles, rewinding from cone. It is customary to rewind all cotton before knitting.

Knitting Machines : These consisted almost entirely of Scott and Williams and Wildman 1/1 Ribs—probably over 30 years old. There were a few of the original interlock machines, built about 1910, but until recently these had not been worked for many years. The fabric produced from these machines was generally inferior to that produced in Great Britain. One works had a large plant of fairly old loop wheel machines, which were in excellent condition, producing good fabric, and had been kept well employed. This firm sold only to their own retail shops. Also fleecy fabric was being made for underwear and nightwear for men. There were a few Britten machines of 30 in. diameter, 40 feeders, making horizontal stripes, one girl working four machines, *i.e.* 160 feeders, the fabric made on these machines being used for sportswear. The bulk of the production, however, consists of plain 1/1 rib fabric, some firms varying this by introducing fancy knits made by tucking and/or the transferring of loops. In practically all the knitting departments machines were working two or three shifts.

CONSUMPTION OF RAW MATERIALS FOR UNDERWEAR

A rough estimate would be 80% cotton, 15% rayon, 5% wool.

FINISHING

Most factories inspected had their own finishing plant as part of, or attached to, the works. Finishing and dyeing of cotton goods is fairly simple. The greater part of the cotton 1/1 fabric produced is simply damped and boarded, the rest is either dyed or bleached. Where dyed, a range of not more than six colours was used, and in one large factory the range was only three. The boarding of fabrics was very poor, no attention being given to the straightness of the knitted courses. Fabrics were rushed through at tremendous speed, with the inevitable result that the edges of the web were pulled well in front of the

centre. Every mechanical device possible was used to save handling the fabric, volume of production being the keynote. There is an increasing interest in the production of goods made of wool and of wool and cotton. To do this, especially to use all wool, the question of a satisfactory shrink-resisting treatment is important. It was observed that many experiments were taking place in the treatment of wool for unshrinkability, colour and feel. It is understood that the U.S.A. Government is encouraging manufacturers to use more wool, firstly on account of the huge stocks of wool held by it, and secondly because of pressure from American agriculturists.

In the cutting department old type laying-up machines were usual in most works. These were fitted up with the usual device for enabling the fabric to pass over strong lights to show up defects. As many as 48 layers were cut at one time with a vertical electric knife. Care in the saving of waste was not much in evidence. Not much attention was given regarding measurements of all garments of a particular size being the same; the explanation given was that " rib fabric stretches ". Production was stated at one girl cutting 500 dozens women's vests per day.

SEAMING

This is generally the same as in Great Britain—flatlocking and overlocking with Wilcox & Gibbs, Union Special and Singer machines—very little care being given to the operation. If the two ends of the fabric being seamed did not meet, no one seemed to bother, consequently the production per operative was much greater than in Great Britain.

One outstanding feature of the factories visited is their specialisation at the present time. During the war the variety of their qualities and styles has been drastically reduced, and they are hoping it will not be increased to any great extent in the future. It has, however, to be borne in mind that using practically only cotton, and with a market of 140 million people, specialisation is not difficult for any one small plant.

WAREHOUSE

There is very little making-up and no label stitching machines are used. Two firms had a very ingenious machine for sticking on labels—one operative could do over 1,000 dozens per week, but to us it seemed probable that after a wash or two the label would come off.

Some firms are experimenting with " speed " benches.

Pressing is usually done on a large Hoffman press, or alternatively, by passing the goods through a calender machine.

The goods are attractively boxed, the string round the box being wrapped and tied by a machine.

Generally all operations are paid for on a piece rate basis, the rate per unit being arrived at by the time study method. The rates appeared to be flexible and easily changed when necessary by agreement. The method of arriving at the basis varies in different factories. For instance, knitting in one was paid for at so many revolutions of the machine (to which cyclometers were fixed); in another, on weight of fabric; and in a third, weight of fabric plus a bonus on the weight produced over a standard.

COSTINGS

On an average the relationship of capital finance to output would be 50%, *i.e.* the turnover/capital ratio is 2 : 1.

Some firms had a very elaborate system of cost accounting and for the calculating, recording and payment of wages. Some firms were using the International Business Machine, and much accessory machinery. Electric typewriters were also used, enabling 9 to 12 copies to be clearly typed at once, and all to be clearly readable. In spite of, or because of, the use of these complicated machines there appeared to be an exceptionally large number of clerks employed. One director of a firm using this system expressed himself as not being sure that it was an economic success.

CONCLUSION 13 : In this section we found that the goods were in the main not comparable with those made in Great Britain, but where comparison could be made, your Delegation were strongly of the opinion that Great Britain has little to learn as to productive methods from manufacturers in the U.S.A., but we found in Canada production of a kind more similar to that in Great Britain.

C. OUTERWEAR

INTRODUCTION

Due to circumstances outside our control, our initial arrangements for visiting outerwear factories in the State of New York, planned for the commencement of our tour, had unfortunately to be abandoned and fitted in at a later stage.

From observations of factories subsequently visited, together with statements from the Secretary of the National Knitted Outerwear Association and the President of the New York Local Knitted Goods Trade Union, we were satisfied that this section of the hosiery industry as understood in Great Britain was largely comprised of small units of individual production. We were assured that taking the whole of the United States of America the number of firms in the knitted goods outerwear section employing more than 500 people was not more than ten. Generally a unit employing 200 people was considered a relatively large concern; the majority range between 50 and 100 employees.

BUILDINGS

In the New York area it is not an uncommon feature to find production housed in large loft buildings. (A multi-storied building let in floors for storage or production as distinct from similar buildings confined to office accommodation.) In the opinion of your Delegation, the conditions in some of these buildings left a good deal to be desired.

We were assured that outside New York the multi-storied building was the common feature as applied to this section of the industry, and we visited one manufacturer with a building of this type in the New York area.

LAYOUT OF FACTORIES

It was evident that the addition of machinery from time to time determined the utilisation of valuable space rather than there being any systemisation of layout of plant. Operatives—knitters and finishers—did not enjoy the same working space as was observed in most producing plants in the fully fashioned section of the trade. Lighting was not up to the standard of other branches

of the industry, in so far as factories we visited were concerned, nor did we observe any special attempt to introduce colour schemes in workrooms.

CONCLUSION 14: In general, buildings and layout of factories were in no way superior to existing factories in Great Britain. In making this observation due allowance is made from evidence given to us that outside New York we should have found perhaps a better picture than observed in factories we visited. Had we to base our opinion upon what we actually saw, then without hesitation we should say in general that the standard was not so good as that of Great Britain.

AIR CONDITIONING AND HUMIDIFYING PLANTS

We saw no evidence of air conditioning or humidifying plants, and from enquiry we were satisfied that such was not a feature of this section of the industry in the U.S.A.

LOCATION OF INDUSTRY

Factories usually specialise in one sub-section, *e.g.* men's, women's or children's. There are, of course, exceptions. New York is the centre of women's and children's knitted outerwear, New England specialises in men's classic type of knitted outerwear. (Classic is an accepted American term within the industry, meaning a line of goods accepted as a common style featured season after season.) Philadelphia is predominantly concerned with men's wear, but also manufactures bedding sets (nightwear). Cleveland specialises in men's and women's wear made on Raschel looms and Milwaukee is the centre for knitted head wear. We were informed that efforts are being made to expand the knitted outerwear industry as far afield as California. Bedding sets have developed into the cut and seam type of apparel.

The knitted bathing suit is meeting severe competition from garments made of woven fabrics—the latter, made in a wide range of materials and styles, are a feature of beach-wear against which the knitting industry will find it difficult to compete.

MACHINERY (KNITTING)

The principal types of knitting machines in operation are circular, power and hand flats of jacquard and flat bar type. All the machinery we saw in operation was of a very coarse gauge. We found no new features in evidence, and only in one factory in Canada did we find a Dubied B.A.R.B. type of machine, and this was making single bed fabric.

Both circular and power flat machines were operated by male and female labour. In both cases it appeared that four machines per person was accepted as a normal job. We saw only male workers employed on hand jacquard machines, but hand flat machines were operated by both males and females. These latter machines were of very old make, mostly a narrow 24-in. bed of very coarse gauge producing single bed fabric of loose tension. We saw little evidence of up-to-date machinery, and estimated that in most cases the machinery in operation at the factories we visited was at least 20/30 years old.

RAW MATERIALS

During the war years a larger percentage of wool has been used in this section of the industry than is normally customary for their civilian trade. The opinion seems to be that wool will become more popular as a result of the experience

of wool garments worn by servicemen. In general there is a far greater proportion of cotton and wool mixtures than are manufactured in this class of the trade in Great Britain. Much of the wool we saw in use was of low grade yarn. It is not unfair criticism to say that from a British standpoint the majority of garments we saw made were of loose tension, but in most cases an exceptional amount of work was put into the finish of the garment, ultimately to hide, at least to some extent, the foundation defects in manufacture. Light brushing of fabric is an almost universal feature of the finish of American outerwear garments.

WINDING AND ANCILLARY MACHINES

While we saw a number of reasonably modern Leesona type of winding machines in operation we also saw a number of very old, and even antiquated, winding machines being used.

The majority of linking machines were of the steady dial type.

The finishing machinery, lockstitch, overlocks, welters, etc., were of the Singer, Willcox & Gibbs and Union Special type.

PRESSING AND GENERAL FINISHING PROCESSES

We made a careful study of the methods adopted in this field of production and came to the following positive conclusion.

CONCLUSION 15: Although in certain cases great efforts were made to put the highest possible finish to a poor garment, there was nothing in their processing and finishing from which we learned anything. Indeed, we are more than satisfied that as far as manufacture of outerwear garments is concerned Great Britain is a long way ahead of the U.S.A.

PRODUCTION METHODS AND EFFICIENCY

Here again we found no evidence of any practical labour-saving devices either by conveyors, chutes or other mechanical devices. In our view the amount of waste allowed in manufacture was much greater than would be tolerated by any British manufacturer. No effort appeared to be made by management to check what seemed to us to be excessive waste in all making-up operations. We feel it is not unfair comment to sum up the position in the outerwear section as we saw it, that the only feature upon which real attention was bestowed was in the final get-up and display of the finished garment for sale.

In making our observations on this section of the industry in the U.S.A. we are mindful of the fact that apparently the type and quality of the garments produced seem generally to conform to public acceptance in America but it is, however, our opinion that this acceptance will only hold good until they are offered garments of better make and quality, and in this field British manufacturers might do well to conduct a searching enquiry into the needs of the American public, as a fruitful field for the development of a lasting export trade.

TYPES OF PRODUCTS

Ladies' sweaters are the largest section of the outerwear industry, followed by infants' and children's wear as next in productive importance, with men's wear last.

There is a very prosperous sports wear section of the knit goods trade, but here again this section of the industry finds serious competition in its field from makers-up of woven fabrics.

We were informed that while knitted suits and skirts have been out of favour for some time it is believed they are now coming back into favour again.

Basically the type and style never originates with the consumer, but with the manufacturer or jobber. In this section of the industry we were informed that neither the chain store nor the department store were in any way responsible for the creation and style of outerwear garments.

It is of particular interest to note that the demand for jacquard sweaters has never been met in the U.S.A. because of the relatively small number of machines in production, and it is forecast that the future demand for this type of garment offers a very open field for all products that come within the category of this type of manufacture. At the moment there is also a very fair trade developing in knitted wool ties.

CONCLUSION 16: We are more than satisfied from our observations and the information gained through other channels that knitting machinery and the general standard of garment produced in the knitted outerwear industry in the U.S.A. falls far below the standard of Great Britain and that the production of U.S. plants is not likely to meet fully the anticipated internal demand.

WAGES

While wages were not part of our direct investigation we cannot refrain from observing that the wages paid to most of the operatives in this section of the industry, particularly in New York, were very high, even by comparison with the fully fashioned section of the industry.

CHARACTER OF THE INDUSTRY

The trading methods in this section of the industry, due largely to the price war between the years 1930/40 had a distinct bearing upon the nature of control of production.

We found the influence on policy of manufacturing by jobbers most marked. (In America the term " jobber " is a somewhat loose definition of a person or persons fulfilling the function of wholesaler in a variety of forms.) There are jobbers carrying on their functions along the same legitimate lines as we understand wholesaling in Great Britain. On the other hand there is a far more speculative type of jobber who has made great inroads into the control of manufacture in the knitted outerwear trade—to the point of virtually owning the production of certain mills. The activities of this type of jobber took the form of harnessing the manufacturer under contract to make only goods to his style and specification from yarns supplied by him.

The manufacturer in such cases has become a direct producing agency for the jobber, and while it was admitted that in a few instances the trading relationship between the two was of a mutually beneficial character, there were far more instances where jobbers took full advantage of the power of control they had established over the manufacturer in the exploitation of his production.

The war years have to some extent eased this position by placing more power in the producers' hands, but we were assured that immediately the pendulum swings the other way this type of jobber will again come fully into his own, since there seems to be no planned organisation to prevent this type of exploitation of small producing units.

There is yet another producing agency within the industry known as the contracting manufacturer. Usually this type is very small indeed, and represents

in most instances the avenue of new entrants into the field of manufacture. The acquisition of a few second-hand machines is the customary method of entering the knit goods industry in the U.S.A., and by the employment of a few people in their operation, production is started by commission knitting for other manufacturers who supply the raw material and control the type of production to be made.

We were informed that this somewhat common practice in the knit goods industry was largely responsible for the individual character of this section of the trade, and such entrants would continue producing on this basis until such time as their volume of output enabled them to take the risk and launch out on their own, selling their production direct to the jobber.

In attempting to find the reason for such a multiplicity of small producing units in a country traditionally accepted as the leader of scientific mass production, we were forced to the conclusion after discussing the problem with representatives of chain stores and department stores that it was largely due to the undue risks attendant upon variety of style and fashion which had prevented the development of this industry from its present stage. It is interesting to note that we did not find one of the larger stores who did any volume of business direct with the manufacturer in this class of production.

RELATIONSHIP OF MANUFACTURERS AND TRADE UNIONS AND WORKING AGREEMENTS

It is of some interest to record that in our examination of this section of the industry with trade union representatives we found what appeared to us an astonishing attitude in relation to the policy of payment or remuneration to the parties employed within the industry.

As a whole the industry is reasonably well organised on a national scale, but the policy of relationship between employers and unions is carried out on a local basis.

It was the New York local union from which we got our information that they were utterly opposed to the application of piece work on certain vital operations; these operations were mainly knitting, cutting, winding and mending.

The reasons advanced for this attitude were that the liability to damage of work in production, through speeding up by any system of payment by results, was neither to the advantage of the employer nor the employee. Conversely on all making-up operations piece work was the established practice of payment. The union were also emphatically opposed to any principle involving the application of any standard rates for any operation throughout the industry. They contended that conditions of manufacture varied so considerably as between mill and mill that to attempt to apply this principle could but result in a state of inequality of wage earning capacity as far as their members were concerned.

The principle of wage fixing is carried out in each mill through the agency of a Pricing Committee set up from the workers themselves, operating in collaboration with representatives of management. Fixing rates for any operation is initially the function of this Committee, and if agreement cannot be reached then the workers' side of the Pricing Committee is implemented by the calling in of a union official, and if this method is not successful then under the terms of an agreement existing between the Manufacturers' Association and the Union the matter is referred to a permanent independent arbitrator whose decision is final and binding on both parties.

We could only conclude from our examination of the relationships between the union and employers that the balance of power had for the time being shifted into the hands of the union who were exercising to the full what they believed to be their rights in demanding for their members from the industry a full share in the profit accruing from the sale of the goods their members were producing.

To understand this situation there must be an appreciation of the operation of Office of Price Administration in the U.S.A. as relating to this section of the industry. We were informed in no uncertain terms that the O.P.A. had virtually accepted the impossibility of controlling the price of products of this industry under its ceiling price regulations. As a result it was contended that high profits were being earned by manufacturers in this section which it can fairly be assumed are reflected in the wages of the operatives.

MANUFACTURE IN CANADA

We have referred herein to certain aspects of the production of outerwear in Canada. The style and type of production is better than that of the U.S.A. and conforms more closely to, but does not equal, British standards.

D. DISTRIBUTION

The main channels of distribution from manufacturers are as follows :—

(i) Department and chain stores (in some cases associated with the manufacturers).

(ii) Wholesalers.

(iii) Retail shops.

(iv) Mail order.

with a few manufacturers selling through their own shops to the public.

The distribution of women's fully fashioned stockings is in the main direct to retail stores—but this may be said to be due to two features :—

1. The large size of the mills engaged in this section of the industry.
2. The substantial use of brand names.

As regards seamless footwear, some mills sell to wholesalers (generally known in the U.S.A. as jobbers), but there is very little commission knitting and most mills have their own selling organisations and sell through all the usual channels. Some mills sell direct to retail stores and men's furnishing stores whilst others sell to department stores and chain stores. Higher grade goods are usually sold direct to the retail trade.

The bulk of the business in knitted outerwear is done through the wholesaler. In many cases the yarn is supplied and the goods are styled by the wholesaler, and the manufacturer acts as a commission knitter. As noted earlier, however, owing to war-time prosperity the position is somewhat changed and some makers now purchase their own yarns and sell the goods when produced to the wholesaler or chain stores. It is doubtful whether the makers will be able to continue to do this when more competitive times return as the wholesalers appear to hold a very strong position in this section of the industry.

The position in the underwear section is quite different. There is very little commission knitting, and while some mills sell to wholesalers, we understand that these are in the minority. Most mills have their own selling organisations and some sell direct to retail stores including men's furnishing stores. Some mills sell direct to the department stores and chain stores.

Higher grade goods usually go direct to the retail shops, and we were informed that the wholesalers' position has become weakened due to the advent of chain stores, who in most cases buy direct from the manufacturer. The wholesaler's function is, however, more or less stabilised in the supply of goods to the smaller retailers and in distributing knitted outerwear to most retailers (large and small). We were informed that prior to the war the proportion of most types of knitwear sold by manufacturers to wholesalers was gradually declining.

The mills trading direct with the stores maintain they are in closer touch with the consumer, and any trends or changes of style or colour, etc., are more quickly reflected back to them than where goods are distributed through wholesale channels. We understand that wholesalers mainly sell to small shopkeepers in the country districts but in addition they handle certain imported goods.

Some of the large chain stores prepare their own specifications in great detail to which their suppliers work; in this manner they obtain uniformity even when buying a similar article from several different mills. Some of the chain stores work very close to the mills and place contracts in classic styles six months ahead.

It appears to us that conventional prices have a very strong hold in North America and there are varying opinions as to the advisability of continuing them in the post-war period, but it seems fairly certain that there will be no change in this respect. The view was expressed that when there is an advance in price of raw material or other costs it is possible to build up the quality to the next price bracket, a possibility which we consider will not always be borne out in practice.

Some of the manufacturers we visited either branded the goods with their own brand name or the brand of their customers, and although this entails many changes of transfers in the day the operators could still transfer 800-900 dozens per day. In the case of some of these mills advertising was not seriously indulged in beyond the branding of goods, but in other cases advertising was fairly extensive and in one case radio programme advertising was used; these concerns were among the largest in their field and supplied the shops direct.

In all cases the manufacturer's customer pays carriage, and goods are quoted " ex works." Some mills have depots throughout the country from which supplies can be drawn by their customers in these zones.

One significent feature in the realm of distribution is the method of marking hosiery and knitwear. It is a statutory requirement in the U.S.A. that all goods shall be accurately described with the fibre content, and all goods therefore appear on the market with the fibre content given in percentages, the fibre of the highest content being the first to be described.

The procedure in Canada is somewhat different as here it is not compulsory to give a description of fibre content, but when a description is given it must be accurate and the fibres stated in order of their preponderance.

We were informed that there is a tendency to take advantage of the high reputation of British hosiery, and mark-ups in the retail shops of 100% and 120% on landed cost are not uncommon.

Mail order or catalogue business is of considerable magnitude in both the U.S.A. and Canada. This is usually conducted by department stores and the chain stores. Some of the department stores, particularly in Canada, issue catalogues for this purpose and are therefore able to supply people in the outlying districts and small towns who are not within easy reach of large retail stores. It should also be noted that one of the largest chain stores in the U.S.A. supplies a

range of sizes to suit all consumer demand and when necessary has special sizes made to order for customers requiring exceptional dimensions, but your Delegation are doubtful whether on the whole the position is different from Great Britain where these are in the main provided by the department store or by the small shopkeeper who buys through the wholesaler.

Your Delegation were interested in the service provided by the Textile Banking Corporation, who for a charge, in our view unduly high, took over the collection of the accounts receivable (debts) of manufacturers. The service included the rendering of accounts and consequential book-keeping and subject to certain conditions the guaranteeing of the account.

CONCLUSION 17 : By reason of the extensive growth of the chain store form of distribution, and of the mail order business, and in the case of women's fully fashioned stockings because of the large size of many of the manufacturers, a substantial volume of most classes of knitwear reaches the American public other than through the wholesaler.

E. TRAINING AND WELFARE

HOURS OF LABOUR

In the United States of America and Canada we found the universal acceptance of the five-day working week, though in Canada the statutory working week is 48 hours, while in the U.S.A. it is 40 hours. However, many plants in Canada are now operating a 40 hour working week.

In the U.S.A. working hours are largely governed by agreements existing as between employers and trade unions. Generally speaking the hosiery trade is working to the 40 hour week but in the outerwear industry, while 40 hours are being worked in some areas, others, particularly New York, are operating a 35 hour week.

NEW ENTRANTS

In some firms visited in America girls are not employed under 18 years unless exemption has been granted on application by the parent or guardian to the Local Employment Bureau for an employment certificate. These certificates are only issued on domestic grounds according to home circumstances, and require a compulsory school attendance of one full day in each week up to the age of 18 years. In Canada the generally accepted age of new entrants is 16, though we did find girls working between 15 and 16 years but with an employment certificate.

FACTORY HEALTH AND WELFARE

A noticeable feature of most of the larger mills in the U.S.A. and Canada was the obvious attention paid by management to the health and well-being of their employees. This feature, while predominating within the fully fashioned section of the industry, was by no means confined to this section. From observation, however, it would appear that in the underwear and outerwear trades, due largely to the predominance of small undertakings, this feature was far less in evidence.

Practice and application differed in detail mill by mill, yet there were common features in all cases that came under our review. It seemed to be the generally accepted practice, where such welfare is given by management, to subject each new entrant into the mill to a thorough medical examination, and any physical

defects revealed reported upon to the applicant in question, and if immediate medical attention is necessary to pass on to the applicant's own medical adviser the interviewing doctor's report.

We did ascertain that by this examination a small proportion of applicants were turned down by revealing health defects of a character considered sufficiently serious to warrant the company not taking such people into their employ. On the other hand, many cases revealed complaints of a character considered to be no bar to entry into employment, provided the applicant agreed to act upon the medical report and seek immediate medical attention. In only one instance did we find a mill employing a permanent resident doctor within the mill. In other cases the doctor was a practising medico within easy reach of the mill and usually spent some time most days within the mill according to the number of people employed.

In the majority of these cases one or more qualified nurses were kept permanently on the staff of the mill, usually in charge of well-equipped rest rooms, to give immediate attention to illness and accident during working hours. From the time of entry into the mill there is no compulsion in relation to further medical attention by the mill doctor or nurses, but in most instances a process of education on the need for utilising the medical facilities provided had developed an almost complete acceptance by the operative of the value of this free health institution. It should be appreciated, however, that general treatment for other than minor ailments was referred to the operative's own doctor.

In one mill the health service extended to include dental, optical and X-ray treatment. While treatment and testing were a free service, the worker did make some payment for dentures and glasses. In other firms this service was co-ordinated with outside dentists and opticians, the firms bearing a share in the general cost of the service given. We did find, however, in one or two mills where selection tests were made to ascertain the adaptability of a person to perform a particular operation, particularly linking, that where glasses were needed to fit the person to do this work the firms in question obtained the glasses.

SOCIAL SERVICES

While in both the U.S.A. and Canada a temporary unemployment scheme is operating, there is no general system of state social service including health insurance as we know it in Great Britain. The industrial approach to meet this deficiency differs in various sections of the industry as a whole. In the outerwear industry, by agreement with the trade union, each employer contributes an amount each year equal to 4% of his total pay roll. This sum is passed on to the trade union which administers from the total funds a sickness, hospital and vacation benefit to members. The sickness benefit amounts to a cash payment of 15 dollars per week for 13 weeks, and should the member require hospital treatment the cost for 3 weeks is borne out of this fund, together with the surgeon's fee in the case of operation.

There is no standard payment for holiday pay—out of the 4%, 1¾% is earmarked for this purpose—although it is usual to pay out in three grades, and we were informed the amounts were generally 25 dollars the lowest grade, and 45 dollars the highest.

In the footwear section the problem is dealt with entirely differently. By agreement with the trade unions holiday pay takes the definite form of each

operative up to 5 years service being entitled to an amount equal to 2% of their annual earnings, and one week's vacation. Above 5 years service the amount is equal to 4% of annual earnings, and the operative is entitled to 2 weeks vacation. The whole scheme of sickness and hospital treatment is covered by the payment by the employer of an amount based on the total pay roll to an approved insurance company who undertake the whole risk of administering the scheme.

FATIGUE OF WORKERS

During our visits to all factories we made careful watch and enquiry on this aspect. In the fully fashioned stocking, underwear and outerwear sections we found no operation being performed involving any greater degree of fatigue than would be found in the same operations in Great Britain.

In the children's sock section, and in some cases in the half hose and seamless sections, we saw girls operating what appeared to be too many machines, particularly so in the case of girls operating run-on-top machines on children's socks and to some extent the same might be said of those operating other classes of seamless machines. Generally speaking, however, we are bound to admit that in our conversations with operatives at their various jobs we found no expression of undue fatigue. We did not overlook the fact that all these operatives were working no more than a 5-day week of 8 hours.

There was no standard type of seating for girls working at the bench, but we did find chair back seats in some of the departments. Seating accommodation was generally provided for operatives on standing jobs.

REST BREAKS

Only in one or two instances did we find the principle of rest breaks accepted by management as a feature of working conditions. In some cases certain operatives in special occupations were allowed a 10 minutes rest period. Some were given 10 minutes in the morning, and some both morning and afternoon, particularly pairers.

We did find great interest displayed by all managements that this feature had become an almost universal policy in the hosiery trade of Great Britain.

CANTEENS

In the largest knitting mill in the U.S.A. we saw what must surely be the world's most up to date cafeteria in a hosiery mill. Only a firm of the size of this concern could possibly meet the requirements of canteen facilities in the manner that we saw here. At a reasonable cost the worker could get a most satisfactory and varied meal.

Apart from this instance we saw nothing outstanding in the way of providing hot meals. Most firms had their rest rooms where workers could take their refreshment if staying inside the mill. Quite a few had service arrangements for taking light refreshments round the factory during working time; some had service counters providing the same facilities. In general we would say that neither the U.S.A. nor Canada have developed at all beyond the stage of progress of the British hosiery industry in this field of welfare.

DRINKING WATER SUPPLY

A striking feature applicable to all factories, large and small, was the plentiful supply of water fountains conveniently placed around the departments. These

were considered a necessity on account of the very high temperature so common everywhere.

LOCKERS

Ample cloak room facilities were in evidence everywhere. In many cases separate lockers were in use while in some cases lockers were shared by two workers, and where communal cloakrooms were used coat hangers were provided. In this respect we feel that the facilities provided are in advance of those afforded in most of the factories in Great Britain.

LAVATORIES

These were very clean and of the usual structure and layout, with plenty of hot running water, paper towels and hygienic accessories. All were within easy access of the operatives.

JOB TRAINING

There appeared to be no new application of job training either in the U.S.A. or Canada. Indeed although we were informed by a few firms that training schools had been instituted within the mill, and by others that they contemplated introducing them, we did not see evidence of any in operation.

STAFF TRAINING

We learned that very few people were imported for supervisory and certain executive posts. The process of selection in the main was from the workers who had shown aptitude. Training was given on the premises and most trainees were finally sent to school before taking up posts inside the factory. This method of training had proved very successful.

CONCLUSION 18: Your Delegation were much impressed by the good type of labour found in most mills, due, we believe, in a goodly measure to the higher entry age of girls into the industry. It was not uncommon to find numbers of girls employed who had been engaged following graduation from high school. The new entrant receives the standard minimum wage of the industry.

F. RESEARCH

Research covers a very wide field and this can be but a very brief and incomplete report or survey as to the extent these activities are carried on in the U.S.A.

The places visited were the Massachusetts Institute of Technology, Boston, the National Bureau of Standards, Washington and the Harris Research Laboratories, Washington.

The M.I.T. is a very large organisation covering the whole field of technology. Some idea of its size can be gathered from the fact that it has approximately one million feet of floor space. The Textile Department is, however, quite small but is being greatly extended. In January, 1945, the Samuel Slater Memorial Textile Research Laboratory was opened, it being stated at the time that " because of its unique electronic equipment " it will become the " pioneer in textile research."

Professor Schwarz, Head of the Department of Textiles, said he felt they were at the beginning of a new era and that very great use would be made of electronics. A great deal of new testing equipment was being built.

Information was given that the finance of the Institute was received from donations, payment for work done, fees from students, and investment revenue. No free grant was received from the Government although a great deal of work had and still was being done on behalf of the Services, for which payment was made. Also they have two schemes for working for the industry; one by closed contract and the other by open contract. In the first, any results are the property of the contractee, and in the second, after a given lapse of time, results may be published if thought of sufficient general interest. They were at present particularly engaged on an investigation into the strength and elasticity of individual fibres.

NATIONAL BUREAU OF STANDARDS, WASHINGTON

This is a Government institution and we did not see much evidence of any scientific work being undertaken. Before the war it was the policy of the Bureau to make arrangements with different industries by which an industry employed a technical staff to conduct research for that industry. Such staff was housed at and was subject to the regulations of the Bureau. The equipment was supplied partly by the Government and partly by the industry, often being given by the latter. The National Association of Hosiery Manufacturers maintained two persons at the Bureau at an approximate cost of $10,000 per annum until the commencement of the war.

It is uncertain whether the arrangement will be renewed, because it was found that as time went on an increasing amount of the time of their staff at the Bureau was being occupied with specific technical problems of their members rather than with original or basic research. Some members used the staff extensively for problems which more properly should have been referred to commercial laboratories, while other members did not use them at all. No decision has yet been made to renew the arrangement.

The impression left by our visit was that no real scientific research work on textiles was being undertaken.

As its name implies, at the National Bureau of Standards the main work as regards the hosiery and knitwear industry was directed to the establishment of commercial standards and commodity specifications. Up to January 1st, 1946, about 350 lists of Commercial Standards have been issued covering all industries. These are on sale from 5c. to 10c. each.

The acceptance or otherwise of these standards is purely voluntary, and there is no enforcement of their provisions. As an example of the working of the Bureau some details are given of a commercial standard for knit underwear sizes which became effective for new production from July 30th, 1943. It is called *A Recorded Voluntary Standard of the Trade.* Its purpose, scope and application are as follows :—

> " This standard is established for the guidance of producers, distributors and users to eliminate confusion in measurements and methods of measuring knit underwear and provides standard measurements and methods to serve as a basis for guaranteeing full size.
>
> " This standard covers standard methods of measuring and standard measurements for knit underwear for boys, children, infants, men and women. It includes recommended symbols for designating different models, underwear box sizes, cone colors for single cotton yarns, methods of washing wool and wool-cotton underwear, and a recommended uniform wording of a label to guarantee full size."

Then follows about 70 pages of diagrams, measurements and sizes of men's, women's, children's and infants' underwear.

Being completely voluntary the standard, even if accepted, can be disregarded at will.

The following is part of a statement issued by the Bureau which answers some of the usual questions arising in connection with the acceptance of a standard and its significance.

> "Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like."

The formulation of standards cannot but have an increasing beneficial effect on an industry, especially where distributors make the adherence to the standard a condition of their contract.

The Bureau was responsible for the Wool Labeling Act under which all goods offered for sale must be clearly labelled, showing the percentages of their fibre content.

CONCLUSION 19: Your Delegation are of the opinion that much could be done in Great Britain along similar lines in regard to labelling, and regard this matter as worthy of consideration by the main Working Party.

A visit was made to a privately owned research laboratory. The proprietor, Dr. Harris, was previously head of the Bureau of Standards. Two years ago he opened his laboratory and now has a staff of 32 persons. He undertook specific research investigations for associations and firms. The equipment was varied, extensive and up to date. They have been working on an entirely new method of treating wool for unshrinkability, and a statement was made that very shortly it will be put on the market. It was stated that they have a long waiting list, and it was clear from the nature of the set-up of the laboratory that good results from research were being obtained.

In conclusion it is our impression that the research work on wool and cotton in the U.S.A. is far behind that in Great Britain, but efforts are being made to extend and develop activities in this direction, particular emphasis being placed on the treatment and finish of wool yarn and goods. A great deal of research is, of course, carried on by DuPont in the production and investigation of synthetic fibres.

G. STATISTICS

In the hosiery section of the industry in the U.S.A. we found available from various sources quite a wealth of statistical information. The National Association of Hosiery Manufacturers obtains monthly a report from each of its members of hosiery production, shipments and unfilled orders. Most of the information obtained from this return is tabulated and circulated to members monthly, while an annual review is made and reported on at some length. Your Delegation consider that similar information similarly presented ought to be made available to British manufacturers in respect of their own production, etc.

From another source, your Delegation obtained further statistical information, which was not published, regarding the fully fashioned stocking industry in the U.S.A. Information as to the experience of British manufacturers is not available at the time of writing this report, so our observations are confined to a review of the information obtained in the U.S.A.

Taking the values of assets as those appearing in the annual accounts, the ratios of turnover to net worth (total assets less liabilities) were as follows :—

	NO. OF COMPANIES	AVERAGE	AVERAGE 2ND AND 3RD QUARTERS	MEDIAN
1937	21	2.1	2.0	1.9
1939	34	2.2	2.2	2.3
1944	56	2.2	2.3	2.8
8 years to 1944 average		2.1	2.2	2.3

Comparing turnover with stock, the following figures for 1944 of 36 mills are of interest :—

Lowest ratio	4.0 times
Highest ratio	24.1 „
Average ratio	8.2 „
Average—2nd and 3rd quarters	8.8 „
Median	9.5 „

A comparison of turnover with working capital (current assets minus current liabilities) for 1944 of 36 mills is as follows :—

Lowest	1.3 times
Highest	9.5 „
Average	3.2 „
Average—2nd and 3rd quarters	3.3 „
Median	3.4 „

An analysis of the balance sheet figures for 1937, 1939 and 1944 reveals the following :—

Year	1937		1939		1944	
Type of Mill	LARGE %	SMALL %	LARGE %	SMALL %	LARGE %	SMALL %
Cash	8	5	8	5	34	35
Debtors	14	13	14	15	10	12
Stock	29	24	30	30	20	15
Current Assets ...	51	42	52	50	64	62
Other Assets ...	49	58	48	50	36	38
TOTAL ASSETS ...	100	100	100	100	100	100
Current Liabilities ...	13	20	13	24	16	18
Other Liabilities ...	6	8	4	5	8	4
TOTAL LIABILITIES ...	19	28	17	29	24	22
NET WORTH	81	72	83	71	76	78

Attention is drawn to the increase in the proportion of net current assets to total net assets and the proportion thereof represented by cash which would be available in part for the finance of post-war rehabilitation.

Information as to sales, gross profits, expenses (understood to be general overheads and selling expenses) and profit for certain mills, expressed as a percentage on sales, is tabulated below :—

NO. OF COMPANIES	YEAR	SALES	GROSS PROFIT	EXPENSES	NET PROFIT
6	1939	100	14	9	5
23	1940	100	14	10	4
20	1941	100	23	10	13
26	1942	100	25	9	16
25	1943	100	23	8	15
32	1944	100	22	8	14

Taking the year 1939, the results varied from a loss of 0.1% to a profit of 9%, while in 1944 it is of interest to note that, of the 32 concerns, 7 showed net profits of over 20% on sales.

In viewing the above statistics, regard should be had to the substantial decrease in the manufacture and sale of silk stockings (fully fashioned and seamless) illustrated as regards the entire trade as follows :—

1940	production	43,482,555	dozen pairs
1941	„	33,834,455	„ „
1942	„	3,378,263	„ „
1943	„	57,324	„ „

In view of these figures, it is not surprising to note that there has been a substantial increase in consumption of rayon yarn by the hosiery industry.

	'000's *lbs.*
1940	16,400
1941	26,300
1942	49,300
1943	49,200

CONCLUSION 20 : Your Delegation are of the opinion that benefits accrue to the industry from the statistical information obtained and circulated in both the U.S.A. and Canada, and strongly recommend that similar information could with advantage be obtained and circulated in Great Britain.

H. COSTINGS

No costings of individual articles were requested by your Delegation as it was felt that for a number of reasons these would afford little help in our deliberations and their request might be embarrassing. However, from discussions with responsible officials and from Messrs. Price Waterhouse & Co., Chartered Accountants, New York, we ascertained that the use of standard costs was considered to be most appropriate and that they were widely used throughout the larger plants. The unit method of costing was otherwise applied and the method of apportioning overheads was generally by reference to the cost of direct labour on the operation—although some readily accepted the view that, for certain operations, this might not be the best method to adopt.

CONCLUSION 21 : Your Delegation feel that in view of the widespread use of standard costs in the larger plants in the U.S.A., this aspect should carefully be considered by the main Working Party in framing its recommendations.

Information was obtained regarding the allowances for taxation purposes of wear and tear, etc., of buildings and machinery. The method of calculating the allowances differs, but it seems quite clear that the allowances granted by

the British taxation authorities compare quite favourably with those given for U.S. taxation purposes.

I. EXPORTS TO NORTH AMERICA

Prior to their visit to North America your Delegation had the advantage of considering the views on the subject of exports to this particular market of a number of British representatives who had previously visited that country. While keeping clearly in mind the opinions they expressed, we approached our problem free from any decided views on the subject, and the comments that follow are based on the information obtained during our visit to the United States of America and Canada, during which we had the opportunity of meeting many persons interested in this aspect of our problem.

SCOPE OF THE MARKET

The volume of consumption of hosiery and knitwear in the United States of America and Canada is such that it was quite clear that the exports from Great Britain to these countries could substantially be increased without materially affecting any single producer in these countries. We have noted previously the fact that in the United States, certain steps are contemplated in regard to the protection of the home industry; particularly is this so in the case of wool products, but we have considered it necessary to advise on the matter without taking account of these possible political repercussions.

PRE-WAR POLICY OF BRITISH MANUFACTURERS

We were informed by substantial buyers that the pre-war policy of British manufacturers was, as a whole, not as forceful as the market justified. In certain directions a relatively substantial export trade was conducted by certain British manufacturers, and this trade was, in the main, confined to the better class fashioned outerwear and fashioned underwear, and medium and high grade men's half hose.

AMERICAN PRODUCTON AND DEMAND

Earlier in this report reference has been made to the probability that there will be an increased demand by the American public for wool garments, and it is the considered opinion of your Delegation that British manufacturers could effectively compete in the manufacture and sale of such goods in the medium and higher end of the trade, particularly as regards the following:—

(*a*) Men's half hose;

(*b*) Infants' and children's wear;

(*c*) Underwear and outerwear (in both cases, men's and women's);

(*d*) Sportswear.

We would also commend to the notice of British manufacturers the possibility of the export of garments made from interlock fabric.

In the field of women's stockings, however, your Delegation are of the opinion that few, if any, possibilities, will present themselves to British manufacturers in this market.

STYLING OF GOODS

We consider that effectively to compete in this market and maintain the high prestige of British made garments that at present exists, every care should be taken by British manufacturers to conform to the style required by the American

market. The approach to this market must involve initial research into the consumer requirements in this class of merchandise, particularly in relation to size, weight of garment, style and cut, colour and design.

METHOD OF DISTRIBUTION

The view was expressed to us that, in this field, British manufacturers had not taken full advantage of the opportunities available for effective trading in this market. Whereas for certain manufacturers conducting a trade of a certain size, the use of import houses and wholesalers is a convenient method of distribution, we would stress the desirability on the part of British manufacturers to sell in this market on as large a scale as possible, consistent with the speciality nature of the type of goods being manufactured. We were informed that small quantities of British goods had been placed upon the American market without creating any bulk demand for such goods, other than satisfying the natural desire of any distributor to sell any goods. Your Delegation feel that the problem of exports to this market should be tackled resolutely, scientifically and profitably, from the long-term point of view. To do this, research into the conditions of consumer demand in North America is necessary, and the establishment of appropriate channels of distribution. In this latter field, we include the setting up by British manufacturing exporters, either singly or collectively, of selling organisations in North America with staff permanently engaged in that country.

A substantial part of the exports to North America of this industry are sold through department and chain stores. In some cases these stores buy through the established buying agencies in their own country, but in others, and, we understand this tendency is growing, through established buying offices in Great Britain. It is through this channel of distribution also that we consider a substantial increase in volume could be effected, and we commend to the Working Party the suggestion that groups of small manufacturers, whose products are manufactured in similar style, could participate in this market and provide the large distributors in America, who may even specify the goods in great detail, with a reasonable volume of goods of that style.

CONCLUSION 22 : Your Delegation are strongly of the opinion that the export to North America of the type of goods referred to herein could be increased substantially, but they stress the necessity for the orderly distribution of such goods, and the important fact that such goods should be made to conform to the requirements of that market. They are of the opinion, however, that the export of hosiery to this market will not suffer in the long run as a result of the present level of exports, but stress the need for a proper and early survey of this market, and when ready, a steady and sufficient flow of the goods to which we have referred. In this connection we would draw attention to the full facilities in the field of market research and promotion of the sale of British wool products, available to British users of wool, provided by the National Wool Textile Export Corporation, who are well represented in New York.

J. LIGHTING, HEATING, AND POWER TRANSMISSION

LIGHTING

We found most plants were well lit and in many cases fluorescent lighting was installed throughout. We were informed that there was little experience

in light control by means of photo-electric cell instead of manually operated switches, due, we were informed, to the low cost of electricity and the desire to obtain consistent lighting throughout the rooms.

HEATING

We were struck by the high temperature obtaining in all the plants visited. We enquired as to the extent to which back-pressure systems were used in the dyeing and finishing sections and were informed that they were not used and that also vacuum pumps were used to reduce back pressure.

We understand that the infra-red drying of textiles has not been developed to any extent in the hosiery and knitwear industry of North America. We were informed that it was regarded as most expensive and was used on woven fabrics in a few cases.

POWER TRANSMISSION

Apart from fully fashioned machines we found few instances where individual drives were used, the method being line shafts and belting at floor level. Linking machines and sewing machines were usually driven by groups.

K. CONCLUDING OBSERVATIONS

In general, your Delegation consider that the British hosiery industry compares not unfavourably with its American counterpart, but observe the great attention paid by North American manufacturers to technical development.

L. ACKNOWLEDGMENTS

Your Delegation acknowledge with gratitude the help they received in their work from the following :—

W. G. R. Howell, British Consulate, New York.

J. Paterson, Trade Commissioner, Toronto.

J. P. Summerscale, Commerce Department, British Embassy, Washington.

H. G. Wonnacott, National Wool Textile Export Corporation of Great Britain, New York.

The representatives of the Trade Associations and Trade Unions and all those manufacturers and others who so readily afforded all the facilities requested.

Your Delegation were struck by the friendly manner in which the manufacturers in the U.S.A. received them, and the full and frank way in which problems were discussed with each and all members of the delegation. These observations apply equally to Canada, where your Delegation were also deeply touched by the warmth of the welcome afforded to them and the hospitality so generously given.

While in New York, your Delegation, through the kind offices of the Consul-General, Sir Francis Evans, entertained many of the persons mentioned herein to dinner, at which they were honoured by the presence of Sir Francis and Lady Evans.

In both the U.S.A. and Canada was found a spirit of ready co-operation and friendliness which was fostered. To further this, return invitations were extended to many, and your Delegation strongly urge that, in the spirit of brotherhood, appropriate invitations be sent by the British Trade Associations concerned, through their opposite numbers in the U.S.A. and Canada, to visit Great Britain and representative British mills, to those who were found to have not only our language in common but those ideals treasured by Britons and their kinsmen.

(signed) R. E. YEABSLEY.
SUSAN BIRD.
P. BUSSENS.
WILLIAM GRIMMOND.
G. W. JOHNSON.
T. W. KEMPTON.
HORACE M. MOULDEN.

List of Plants, Trade Associations, Manufacturers, Government and Trade Union Officials, etc., visited by the Hosiery Working Party Delegation in the U.S.A.

PLANTS VISITED

Philip Knitting Mills, New York.
Rudolph Knitting Mills, New York.
Little Falls Manufacturing Co., Little Falls, New York.
Waterville Textile Mills Incorporated, Waterville, New York.
Fort Schuyler Knitting Company, Utica, New York.
Globe Knitting Works, Grand Rapids, Michigan.
Berkshire Knitting Mills, Reading, Pa.
Infants' Socks Incorporated, Reading, Pa.
Nolde & Horst Company, Reading, Pa.
Holeproof Hosiery Company, Milwaukee, Wisconsin.
Phoenix Hosiery Company, Milwaukee, Wisconsin.
Adams Millis Corporation, High Point, North Carolina.
O. E. Kearns & Son, High Point, North Carolina.
Interwoven Stocking Company, Martinsburg, West Virginia.
Tudor Knitting Mills, New York.
Vogue Knitting Mills, nr. Reading, Pa.

TRADE ASSOCIATIONS

Mr. Earl Constantine, President, National Association of Hosiery Manufacturers, New York.
Mr. Lent, Underwear Institute, New York.
Mr. L. R. Michelson, National Knitted Outerwear Association, New York.

MACHINERY MAKERS VISITED

Textile Machine Works, Reading, Pa.
Wilcox & Gibbs, Incorporated.
Singer Sewing Machine Co., New York.

GOVERNMENT OFFICIALS AND OTHERS

Mr. J. P. Summerscale, British Embassy, Washington.
Mr. W. G. R. Howell, Consulate General's Office, New York.
Mr. H. G. Wonnacott, National Wool Textile Export Corporation of Great Britain, New York.
Mrs. June H. Rhodes, Bureau of Fashion Trends and Woolknit Associates Incorporated, New York.
Mr. Savage, Lyle & Scott, Ltd. New York.
Textile Banking Company, New York.
Price, Waterhouse & Co., Chartered Accountants, New York.

TRADE UNION OFFICIALS

Mr. Louis Nelson, Manager-Secretary, Knitgoods Workers Union.
Mr. William Smith, American Federation of Hosiery Workers.

RESEARCH, ETC., CENTRES VISITED

The Massachusetts Institute of Technology, Boston.
The Harris Research Laboratory, Washington.
National Bureau of Standards, Washington.

STORES AND SHOPS EXAMINED

Lord & Taylor, New York.
J. C. Penny & Co., New York.
W. T. Grant Co., New York.
B. Altman & Co., New York.
Macy & Co., New York.
F. W. Woolworth & Co., New York.
Saulka, New York.
John David Inc., New York.
Marshal Fields, Chicago.

Plants visited and persons who assisted the Delegation in Canada

PLANTS VISITED

T. Eaton Company, Hamilton.
Zimmerknit Company, Hamilton.
Mercury Mills, Hamilton.

DISCUSSIONS WITH—

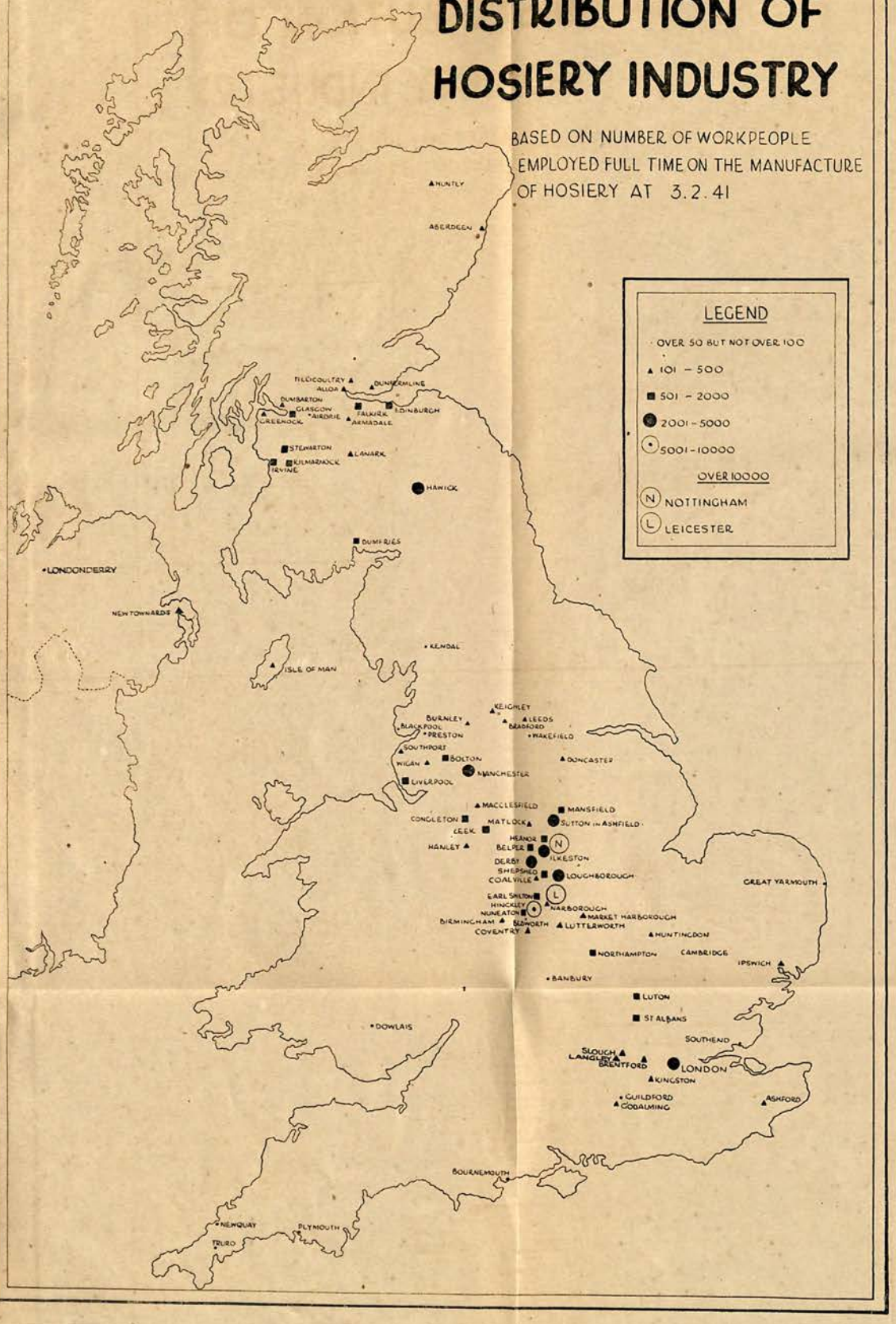
Mr. W. A. Kennedy of the W. J. Westaway Company Limited, Textile Machinery Manufacturers and Merchants.
Major Douglas Hallam, Knit Goods Association.
Mr. J. D. Woods, Mr. Ralph Presgrave, Mr. Cutler } York Knitting Mills.
Mr. George Biddle, Monarch Knitting Co., Ltd.
Mr. Lerenbaum, Mr. Morgan } Ontario Silknit Co.
Mr. J. Paterson, Trade Commissioner, Toronto.

STORES EXAMINED

Robert Simpson Co., Toronto.

DISTRIBUTION OF HOSIERY INDUSTRY

BASED ON NUMBER OF WORKPEOPLE EMPLOYED FULL TIME ON THE MANUFACTURE OF HOSIERY AT 3.2.41



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